

!ĭΘþľľ ĐžĎžΘþľľ Ŷε !ƨǴ

pŊĵĎžþĭľľ ƕyĎžƑШ

ƕ۱þΘľľ !Ŋǂϒ / ƕȚƑĭþľľ !Ŋǂϒ !ƨƽ

ĐžƐŊĵžyǴ þĭƗƨШƑĎž ƕľƑƨþ

أثر برنامج تدريبي تأهيلي وغذائي على النساء المصابات

بمرض هشاشة العظام فوق سن الأربعين في مدينة اربد - الأردن

The Effect of Rehabilitative Training Program and Diet Nutrition on Women with Osteoporosis Above the Age of Forty in Irbid province, Jordan

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نـدوة عبـدالله درابـسه

بإشراف الأستاذ الدكتور

محمد أحمد رواشدة

"ƕȚƑĭþľľ !Ŋǂϒ Ĭƺ þĭƗƨШƑĎžľľ ƕШþơ Ăǂϒ üŊȚΘľľ ƖƑǂƱǂĐžľľ ŰƑĎžƖƗƨε ƕľƑƨþľľ ĿƤľǰ !ơƽ"

ĬƨƐþơľľ üȚƻľľ

2013 / 2012

قرار لجنة المناقشة

أثر برنامج تدريبي تأهيلي وغذائي على النساء المصابات بمرض هشاشة العظام فوق سن الأربعين في مدينة اربد - الأردن

إعداد

ندوة عبدالله درابسه

بكالوريوس تربية رياضية /جامعة اليرموك، اربد ٢٠٠٩/٢٠١٠

قُدمت هذه الرسالة استكمالاً لمتطلبات الحصول على درجة الماجستير في كلية التربية الرياضية تخصص علوم الحركة

في جامعة اليرموك، إربد، الأردن

وافق عليها

الأستاذ الدكتور محمد أحمد رواشدة.................................. رئيساً ومشرفاً

أستاذ الفسيولوجي والطب الرياضي ، قسم علوم الرياضة، جامعة اليرموك

الدكتور محمود عزت نزال.................................. عضواً

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الأستاذ الدكتور زياد درويش الكردي.................................. عضواً

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تاريخ مناقشة الرسالة

٢٢ / ١١ / ٢٠١٢

ب

الإهـــــداء

إلى سيدنا... رسول الله صلى الله عليه وسلم هادي الأمة ونبيها وقائدها ومعلمها ومرشدها.

الشكر والتقدير

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

فهرس المحتويات

فهرس الجداول

فهرس الاشكال

فهرس الملاحق

[illegible]

[illegible] .2012 /2011 ([illegible])

[illegible] (65-40) [illegible] (10) [illegible] (16) [illegible] (60) [illegible] (3) [illegible]

[illegible] (T-test) [illegible] .(SPSS) [illegible]

[illegible]:

1. [illegible]
2. [illegible]

[illegible]

المقدمة وأهمية الدراسة

- مقدمة الدراسة
- مشكلة الدراسة
- أهمية الدراسة
- أهداف الدراسة

(2005)

2003 (WHO)

[illegible] (1987) [illegible]

[illegible].

[illegible] (2010) [illegible]

[illegible] - [illegible] - [illegible].

[illegible] (2004) [illegible]

[illegible].

(Osteoporosis) [illegible]

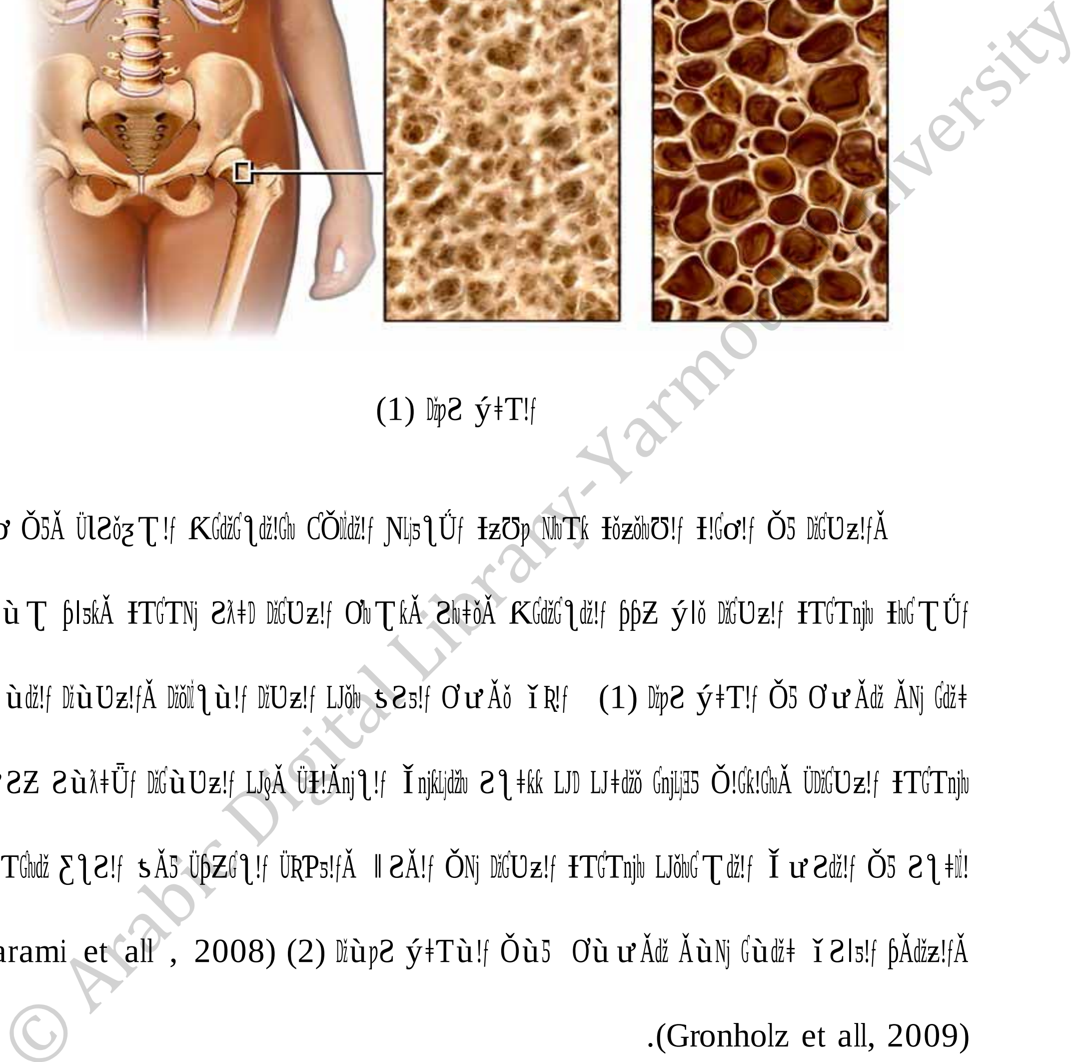
[illegible].

[illegible] (Osteoporosis) [illegible]:

[illegible].

[illegible].

(Melton, 2003; Chad, 2002; Heidari et all, 2010)



(1) ǅǐǡ ýǂǭǙ

ǂùǙơ ŎǕĂ ÜǙŹǒǳ ǙǙ ƘǙǓǙǙ ǙǙǙ ǒǙǙ ǙǙǙǙ ǂƶƱƿ ǙǙǙ ǂǒǶǙ Ʊǂ ǂǙơ ǙǕ ǙǙǙƲǙĂ

ǙǙǙǙŭù ǙǙ ƿǀǕǩĂ ǂǙǙǙ ŹƛǂǙ ǙǙǙǙ ƠǙǙĂ ǙǂǙĂ ƘǙǙǙǙ ƿƿƵ ýǀǚ ǙǙǙǙ ǂǙǙǙ ǂǙǙǙǙ

ƔǙǙùǙǙ ǙùǙǙĂ ǙǙǙǙù ǙǙǙ ǙǙǙ ǙǙǙ ƠưĂǚ ǏǙ (1) ǅǐǡ ýǂǭǙ ǙǕ ƠưĂǙ ĂǙ ǙǙǂ

ǂùưŹƵ ŹùƛǂǙ ǙǙùǙǙǙ ǙĂ ÜǂĂǙ ǏǙǙǙ ǙǂǙ ǙǙ ǙǂǙǙ ǙǙǙ ǙǙĂ ÜǙǙǙǙǙ ǂǙǙǙǙ

ÜǙŹùǙǙ ǙǙǙǙ ǙĂǕ ÜƿƵǙ ÜǙǙĂ ǁŹĂǙ ŎǙ ǙǙǙǙ ǂǙǙǙ ǙǙǙǙ Ǐ ưŹǙǙ ǙǕ ŹǙǂǙ

(Sharami et all , 2008) (2) ǅùǐǡ ýǂǭùǙ ǙùǕ Ơù ưĂǙ ĂùǙǙ ǙùǙǂ ǏŹǀǕǙ ƿĂǙǙĂ

.(Gronholz et all, 2009)



(2) ǙǕƿ üǀǙǙ

[illegible]:

[illegible]

[illegible] (2002) [illegible] %30 [illegible] %20 [illegible] %70 [illegible] 20 [illegible].

[illegible] 1.7 [illegible] 1990 [illegible] 6.3 [illegible] 2050 [illegible] 1990 [illegible] (Flower, 2006).

[illegible] (2011) [illegible] 2020 [illegible] % 25 [illegible]

[illegible]

[illegible] (Osteoporosis) [illegible]

[illegible]

[illegible] %20 [illegible]

[illegible] .(2005 [illegible])

350 [illegible] 206 [illegible] .(1998 [illegible])

[illegible]

[illegible]

[illegible]

[illegible]

1. [illegible]

2. [illegible]

[illegible]

1. [illegible]
[illegible]

2. [illegible]
[illegible]

[illegible]

[illegible]
[illegible] (Bonedensity)
[illegible]
[illegible]
Gronholz et all, 2009; Sharami et all,) [illegible]
,(2008

[illegible] 6 [illegible]
[illegible] 55 - 45 [illegible]
[illegible]
(McAuliffe and White head, 2005)

ǇǑǎ ƴǜƧǑǎ ƧǩǑǎǑǩǉƪ ý‡! ƗǑǉƥƶǑǎ!ƒ ƥƒĂǑǎ!ƒ ƗǑǑǎ‡ Ĭ!ǫ ƪƥǴƵ ƧǑƬǑ ǑǜƱ ƠǑƱƮǑǎ ĂǋǍ :ǜĭǄǎưƴǁǁ ǜƷƑǩǀǁǁ

ǇǑǎ ƧƬǴǜǑǎ ƧǑƸ ƧƬƋǑǎ‡ ĭƧǑƧƪ!ƒ ƔƱ!ƒ Ǒ5 ǄƥƤǩƪǑĂ Ü(BMD) ǄǴƲƶ!ƒ Ɨ5ǴǍ‡

.(Cole, 2008) ƧĂƪ‡!ƒ ƧƱƤĂ ǄǴƲƶ!ƒ ƗƬǴƬǋ

ǜƨƐƥǫǁǁ ƪŰƑƜǄ

.ǇƥƧŰƒ _ ƥǜƧƒ ƗǉǑƥǑǎ Ǒ5 ǑǁơǑǎ!ƒ ƴǑǩƞǑǎ!ƒ ƘƒƥǑƪ :ăƥƪǴǁǁ üƑƜǄǁǁ

Ĭù!ǫ 2011/9 /5) ǇǑùǜ ǴùǑǎ Ɨùƶƿƒ Ă!ƒ ƪƧùǩ5!ƒ Ǒù5 Ɨƪƒ Ƨƥ!ƒ ǉƦǋ ƾǑǜƱǩ Ǆǩ :ĬǑƑǄǎƦǁǁ üƑƜǄǁǁ

.(2012/ 1/ 5

ƪƧùǑǑǎǕƒ ĬƨƬǩƪǑǎ - ǑƶǑǜƱ!ƒ ƜŰƶ!ƒ ǄǑǁƶǩ! ǑǉǴǑǎ!Ǖƒ ǇƞǉǜĂǩ ƨ‡Ƨǎ) ƥǜƧǫ ƗǉǑƥǑǎ :ĬǑƑǀǄǁǁ üƑƜǄǁǁ

.ǇƥƧǕƒ - (Ɨǎƪǜ

الإطار النظري والدراسات

ƗùǒþƒƧϱ ƗǁưƵ 620 ù! ƗǒƪǴp ɏƼƒĂƧǂ ýǆǭǩ ǴǌǈǅĂ Ü(ƧĂƽƪƽ!ƒĂ ǅĂǒƪ!Ǵǂ!ƒ) :ýƛǆ ƗǆǴǌ!ƒ ƗǒǉþƶǆƵ!ƒ

Ǐùǁ Ƶ ƧƱǒƪùǩ (ǅǴƶǆǕ ƒ ƘǗưƵĂ ƔǁǀƵ! ƒ Ɨǁưƶǂ ƗǒþƒƧϱǗ!ƒ ƘǗưƶ!ƒ ǇƵ ƻǁǩƤǩ ǑǨ!ƒ) ƗǂƧơ!ƒ

Ǐùǁ Ƶ ƗùƵƨĂǆ ǅǴǓƵ Ǉǆ ǑǆǓƶ!ƒ ýǂǒǌ!ƒ ǇĂǂǩǒĂ ÜǋǒǁƵ ǓƼǴơǩĂ ǊǩǒƶưĂ þþơǩĂ ǅƪƞ!ƒ ƗǂƧơ

ǅƪùǀǒ ƚ ùǒơ Üý ƬǴƽǆƵ!ƒ ƗƱƪƒĂƻ Ưƶƻ!ƒ ǴǌưƶƻƻƻǊǆǴǓƵ ýƬǩǩĂ ÜǴƻǒƧǀǩ ýƛǴǆǩ!Ǵƻ ǅƪƞ!ƒ ǑƻǉǴƞ

: ǴǆǊ ǇǒƑƨƞ Ǐ!ϱ ǇǴƪǉǗƒ ǅƪƞ ǑƼ ǑǆǓƶ!ƒ ýǂǒǌ!ƒ

.ǐƧþƬ!ƒ ƒ ƽǀ!ƒĂ ǐƧǀƽ!ƒ þĂǆƶ!ƒĂ ƗǆƞǆƞƞǇǆ ǇĂǂǩǒĂ : ăþǊѲǅǁƐ ǏǅưƴǁƐ ùǀǐǋǁƐ .1

ǑǁƽƪùǁƒƵ ƨƧƱ!ƒĂ ǐĂǁƶ!ƒ ƨƧƱǁ! ǑǆǓƶ!ƒ ýǂǒǌ!ƒ Ǉǆ ǇĂǂǩǒĂ :Ǐʓ þƯǁƐ ǏǅưƴǁƐ ùǀǐǋǁƐ .2

.(Guyton and hall, 2004) (ƯĂơ!ƒ ÜǇǒpǴƪ!ƒĂ ǇǒþƵǴƪ!ƒ ǅǴǓƵ)

ǅƒĂùǀ! Ǒùƪ ǴƪǕƒ ƧĂùơǆ! ǑǊ þǁƞ!ƒĂ ƘǗưƶ!ƒ ǴǊĂƪǂǩ ǑǨ!ƒ ǅǴǓƶ!ƒ ǇǅơưƒĂ!ƒ ǇǆĂ

ƗùƽǁƤǆ!ƒ ǅǴƞơǕƒĂ ýǴǂƬǕƒ ƘƒƦ ǅǴǓƶ!ƒ Ǉǆ ƧǒƻǂþþƵ Ǉǆ ǑǆǓƶ!ƒ ƨǴǌƞ!ƒ ǇĂǂǩǒ Ɨǒơ ÜǇǴƪǉǗƒ

ƗùǒǉǒǩĂƧƻ) ƗǒĂưùƵ þƒĂǆ ǏǁƵ ǅǴǓƶ!ƒ ǐĂǩơǩĂ ǅƪƞ!ƒ ƗƻǗƬĂ ýǂƬ þþơǒ ǐƦ!ƒ ƧǴƱǕƒ ƗǉĂǂǆ

ǑùǊ Ü(ǅùǓƶ!ƒ ǇǉùǆǕ %66 ƗƻƪùǉƻƗùǒǉþƶǆ ѲǗǆǅ) ƗǒĂưƵ ƧǒƺĂ Ü(ǅǓƶ!ƒ Ǉǆ %34 ƗƻƪǉƻƱĂʓư ù!ƒ ýùǆơǩ! ƔǁƬ ĂưƵ Ƙƪǒ! ǇǴƪǉǗƒ ǅǴǓƵĂ ÜǅĂǒƪ!Ǵǂ!ƒ ƘǴƽƪĂƼ ÜǅĂǒƪ!Ǵǂ!ƒ ƘǴǉĂƻƧǂ

ƗƞƪùǉǕ ýùǂǅǩ ƚþùơǒ ǇǴƪǉǗƒ ǀǴơ ýƒĂƱĂ ÜǑơ ǊǒƪǉǑǊ ǴǆǉϱĂ ÜƱǀƼ ǊǒǁƵ ǀƧǆǩƪǆ!ƒ ǀþǒþƶ!ƒ

.ǅǴùǓƶǁ! ǅǴǉƻ!ƒĂ ǅþǌ!ƒ Ǉǆ ƗǁǆǴǂ ǀƧĂþ ǁǴǉǊ ǐǅ Üǀþǒþƞ ƗǒǆǓƵ ƗƞƪǉƻǴǌǁơǆ ýơǒ! ƗǆǒþǀƇ ǅǴǓƶ!ƒ

(2000 ÜǓƼǴơ)

LJùƵ lƧǴùƕƵ ĂùǊ ĎžƱƶ!ƒ LJƋƕ (2002 ÜĎžǴƱƶ!ƒ ƨpƧƙ! ƗŏďžƵ!Ǵƶ!ƒ Ɨŏƶďžƞ!ƒ) ƻŏƧƶƙ ƔƪơĂ

Ŏù5 ƗùŏǁƤƒƥ!ƒ ǴǴưƵǖ! ǵŏďžǴơĂ ƘǘưƶǁǗ! ǵŏƑǴLjƕ ǵďžƵƒƥ ǊLjĂǂ Ŏ5 ǊƙƽŏƱĂ ýƛďžƙƙ Üƥlƶďž Ŏơ ǋŏƪLj

.ĎžǴƱƶ!ƒ ƗƕǘƬĂ lĂl! ĭƧĂƧư!ƒ ĎžĂŏƪ!Ǵǂǁ! ǵŏƪŏƑƧ ǵLjƨƤďžĂ ÜĎžƪƞ!ƒ

Ŏùơ ǋŏƪùLj ĎžùƱƶ!ƒ LJǅ (2007Ü ĎžǴƱƶ!ƒ ƨpƧƙ LJďž ƗŏǴpĂǁ! ƗŏLjƥƧǕƒ Ɨŏƶďžƞ!ƒ) ƥǂƋƙĂ Ǵďžǂ

Ŏùƙ!ƒ "ĎžǴưù!ƒ ǋŏƪLj!ƒ LJŏƙĂƧƕ" lƥǴďž ŎǊĂ "LJŏƞǕĂǂ!ƒ" ĬƵƥƙ (ƗŏĂưƵ) ƗŏLjŏƙĂƧƕ lƥǴďž LJďž LJĂǂƙŏ

ǊùŏƵĂǅ ÜǴùŏǘƤ ĬǁƵ ŎďžƱƶ!ƒ ǋŏƪLj!ƒ ĭĂƙơŏ ǁ!Ʀ Ĭ!ƒ Ɨ5ǴưƺĂ ÜǊƙLjĂƧďž ĎžŏƥƙĂ ǊƙƑŏǊ ĎžƱƶǁ! Ʊ5ơƙ

ÜǊƙƕǘùƬĂ ǊùƙĂp ĎžùƱƶǁ! ŎƱƶŏ ĭƦ!ƒ ĎžĂŏƪ!Ǵǂ!ƒ ƗƬǴƤ ƗŏLjƥƶďž ƟǘďžǅĂ ÜǊŏƕƬƵ ƻǴŏ!ǅ ÜƗŏĂďžƥ

Ďžƪùƞ!ƒ ǴǌŏǁƵ ƥďžƙƶŏ ĭƦ!ƒ ƨǴǂƙƧǕƒ ƗƱlLj ƥƶƙ ǴǌLjǅ ƗŏơĎžǴƱƶǁ! ƗǁƬƒĂƙďž!ƒ ƗǂƧơ!ƒ ƗƶŏƕƱ! ƗƞŏƙLjǂĂ

ƧǴùƛǴ Ǵùǌ! Ŏùƙ!ƒ Ɨ5ǁƙƤďž!ƒ Ʊƒ ƧďžǕǴƕ ƗƕǴƬǕƒ ƗĂƥơ! ƗưƧƵ ƧƛǂǅLJĂǂƙ ǴǌLjƺ5 ƗǂƧơ!ƒ ǁǁƙ Ŏ5

.(ĎžǴƱƶ!ƒ ƗƬǴƬǊĂ ÜĎžƱƶ!ƒ LJǴƱƧƪ ÜƟǴƪǂ!ƒ) :ýƛďž ǴǌƙĂpĂ ĎžǴƱƶ!ƒ ĬǁƵ Ɨŏƕǁƪ

ĂùǊ ĎžǴùƱƶ!ƒ ƗƬǴƬùǊ Ʊ ƧďžĂ ÜĎžǴƱƶ!ƒ ƱƒƧďžƋƕ ƗƱƕƙƧďž!ƒ ƧƕǂǕƒ ƗǁǂƬďž!ƒ ƧĂƪǂ!ƒ ƥƶƙĂ

ŎǊ ĭƧl5!ƒ ƥĂďžƶ!ƒ ƧĂƪǂ ƥƶƙĂ ĎžǴƵ ýǂ ƒ ƤƬ LJĂŏǁďž 1.5 ƧĂƪǂ ǴƒƧĂ LJďžǴǂ!ƒ ŎƪŏƑƧ!ƒ Ɣƕƪ!ƒ

.(Stone et all, 2003) LJƪ!ƒ ƧǴƕǂ LJŏƕ ƗƬǴƤ ǵƵĂŏƬ ƧƛǂǕƒ

Ĭù!ƺ ƗùLjĂǂƙďž!ƒ ƗŏďžƱƶ!ƒ Ɨǁƙǂ!ƒ Ɨŏďžǂƕ ƧƛƋƙŏ LJǴƪLjƺ ĭǅ ăƥ! ĎžǴƱƶ!ƒ ƗƬǴƬǊ Ʊ Ƨďž ƗĂƥơĂ

ǴùďžƒlLjùƙ ƗùŏďžƱƶ!ƒ Ɨǁƙǂ!ƒ Ɨŏďžǂ LJǅ ǴďžƕĂ ÜƗŏďžƱƶ!ƒ ǊƙǁƙǂlĂƧƦ Ĭ!ƺ LJǴƪLjǕƒ ƒƦǊ ýĂƬĂ LJŏơ

Ǵùďžǂ LJŏLjƪùďž!ƒ ƒ ǴƤƬǕƒ Ŏ5 ĬǁƵǅ LJĂǂƙ ĎžǴƱƶ!ƒ ƗƬǴƬǌƕ ƗƕǴƬǕƒ ƧƱǴƤďž LJƺ5 LJƪ!ƒ Ŏ5 ǴLjďžƥlƙ

ƗùŏƑƒƦƺ!ƒ ƧùƬǴǁƶ!Ǵƕ Ďžƪùƞ!ƒ ƥƒƥùďžƺ ƒ lLjĂ ƗƑŏƪ!ƒ ƗŏƦƺƙ!ƒ ƧƕƙƶƙĂ ÜLjǴLjƥǅ (3) ĎžpƧ ýǂƬ!ƒ ƠưĂŏ

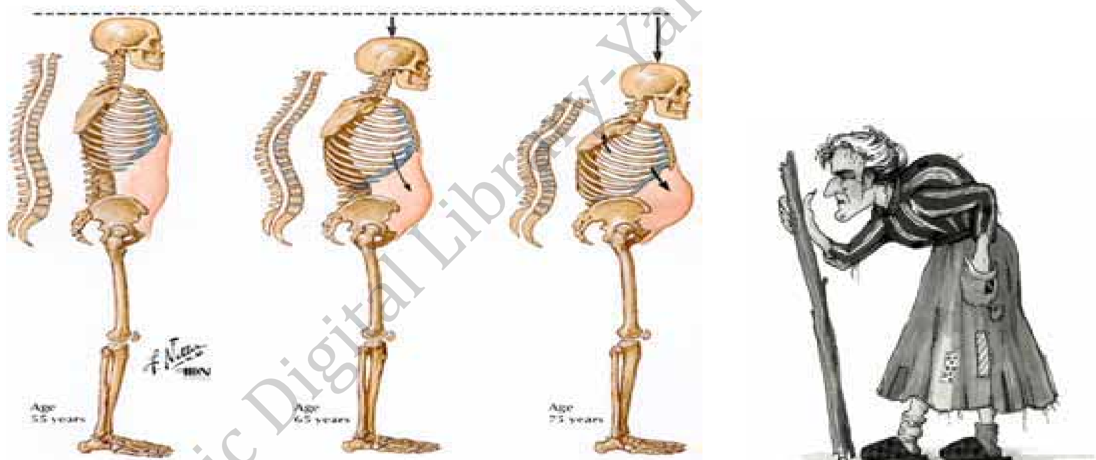
ƥƒƥƨƒ Ɨùŏơ ÜƗƕǴùƬǘ! ĭƥƋùƙ Ŏƙ!ƒ ƔǴƕƪǕƒ ĎžǊǅ LJďž ĎžĂŏƪ!Ǵǂ!Ǵǂ ƗŏƧĂƧư!ƒ ƗŏLjƥƶďž!ƒ ƟǘďžǕƒĂ

LjƧǴƬƙLjƺ LJďž ĎžƸƧ!ǴƕĂ ÜĎž!Ǵƶ!ƒ ǴǴơLjǅ ƻǁƙƤďž Ŏ5 ǴǴƪLj!ƒ LJŏƕ (Osteoporosis) Ʊ ƧďžǕƒ ƒƦǊ ƧǴƬƙLjƒ

ablake, 2000) 3:1 [illegible] .(Fogelman

[illegible] .(Melton, 2001) [illegible]

[illegible] :(3) [illegible]



[illegible] Remodeling [illegible] Osteoclast [illegible] Osteoblast [illegible] (Osteoclast) [illegible] (Osteoblast) [illegible] .(Manolagas&Jilka, 1995) [illegible](2008 [illegible])

• !ƑưƴǁƐ ƕøøøƪƑƪǉ ƒ ƥƊǏ

:DžǐYǋǆ ǍǁǠ ƺǆTǐ ǊǋǄ !ƑưƴǁƐ ƕƪƑƪǉ ƒ ƥƊǏ ƺǐǆTƗ DžY ƑDžƈ . ƈ

1. ƠƪǒƑƧ!ƒ ǍƊ Ǒ!ǍǕƒ YǍǉ!ƒ (Primary Osteporosis).

2. ǐǍǉǤǐ!ƒ YǍǉ!ƒ (Secondary Osteporosis).

:Ǎǁǟ Ǐ ƨǐƟƥǁƐ Ǌƈ ǏǁǋǓƐ ƱǋǆǁƐ ! ƨƽǐ ƘǐƟ

1. ƗTǴTǋ ǋǤƲƶ!ƒ ǈƧƙƽ! Ǥǆ ƥƶƕ ǈƪ ƩǑǆ!ƒ Σ

ǈǆǆ Ƨǂƕǆ ƘpǍ Ǒƽ ƚǆƱ!ƒ YǤƱǁǉǥǍ ǄǤƪǉ!ƒ ǎƥ! ǈǒƞǍƧƙƪǕƒ ǈǍǆƧǋ ƒ ǁǉ ǈƵ ǋƙǤǉ ǍǋǍ

.ǈǍƧǒƙƪǍƙƪƙ!ƒ ǈǍǆƧǋ ǎǍƙƪǆ ƯǤƽƤǉƒ ƥǉƵ ǖǤƞƧ!ƒ ǎƥ! ƚƥơǒ Ǥǆǂ ǕǁǤǒơ!ƒ

2. ƗTǴTǋ ǋǤƲƶ!ƒ ƗƱƕƙƧǆ!ƒ ǈƪƕ ƗƤǍƤǒT!ƒ ƗǒƶǒƕƱ!ƒ.

3. ƗTǴTǋ ǋǤƲƶ!ƒ Ɨ!Ǎǌǋǆǁǆƞƪƕ!ƒ.ƔƕƪǇ

ƒƦǋ YǍǉ!ƒ ǈǆǆ ƯƧǆ ƗTǴTǋ ǋǤƲƶ!ƒ Ƨǒƺ ǕƴƑǴT ƚǒơ Ǌǉǐ ƚƥơǒ ǎƥ! ƧǤƺƬ ƪǉ!ƒ ǄǤǉƹǈǍ

.(Kenny, 2000) ǖǆơ!ƒ ǈƧƙƽ

ǤǆƊ YǍǉ!ƒ ǐǍǉǤǐ!ƒ ǈǆǆ ƯƧǆ ƗTǴTǋ ǋǤƲƶ!ƒ (Secondary Osteporosis) ǋǆǉǒƽ ǈƵ

ƗùǒǍƶǆǍ ƗùǒƥƶǆǆƘǤƕǤǋǉƙ!ƒ ƥǍƞǍ! ƗƞǒǆǉǍƊ ǕǄǤǆƬ!ƒ ƥƥƺ!ƒ ƘǤǉǍǆǆƧǋ ƨƒƧƽǫ Ǒƽ ƔƒƧƱƲƒ ƥǍƞǍ

ǖTùƽ!ƒ :ǖǃǆǆ ƯƒƧǆǕƒ Ư ƶƕ ƗƞǒǆǉǍƊ ǕǆǆǤǋǆǆƶ!ƒ ǈǒǍǂǆ Ǒƽ ǖƤƥǒ ǐǚ!ƒ ǆǍǒƪ!Ǥǂ!ƒ ƒ ǤƬǆǆǐ ƴǉǆǆǆ

.(Peel & Eastell, 1996) ƗǒǉǍǆǆƧǋǉ!ƒ ƘǤƕƒƧƱƲǓƒ ǕƗǒƪǉǤǆǆ!ƒ ƥƥƺ!ƒ ƧǍƬp ǕǐǍǁƚ!ƒ

[illegible]:

[illegible]

[illegible] ([illegible]) [illegible]

[illegible]:

1. [illegible].
2. [illegible].
3. [illegible].
4. [illegible] (2011 [illegible]).

- [illegible]

[illegible]:

1. [illegible] ([illegible]).

[illegible] ([illegible]) [illegible] (PTH) [illegible] (Pilon, 2001).

[illegible] .(Hyiaman et all ,1998)

2. [illegible]

[illegible] .(Pilon , 2001)

3. [illegible] :

[illegible]

(15-10) %50

(4)

5 3

(Kanis et all , 2008).

:(4)

Normal bone matrix

Osteoporosis

-45 (2002)

55

%20

- [illegible]

- [illegible]

- [illegible]

- [illegible]

- [illegible]

[illegible]

[illegible]

1. [illegible]

[illegible] (Harrison's et all, 2006).

[illegible]

[illegible] (2004) [illegible]

[illegible] (D) [illegible]

2. [illegible]:

[illegible] (%50 - %40) [illegible] (%22 - %13) [illegible] (2011 [illegible]).

3. [illegible]:

[illegible] (Hyiaman et all, 1998) [illegible].

4. [illegible]:

[illegible] .(2000

5. [illegible]:

[illegible] .(Conradie, 2005)

6. [illegible]:

[illegible] .(Reid , 1997)

6. [illegible] (Harrison's et all, 2006)

7. [illegible] ([illegible])

8. [illegible].

.þNjNJȠ 6 DžY ƣĭŘŀ ƔƣDžǁ Njƈ ƒşǂƯDž ƱƑȚþǕƐ !ƣY.10

.ƒƑШǊǕƐ Njƈ üDžƟǁƐ !ƣY.11

.ƕĭDžƜyǁƐ ƕǂŀǀǁƐ þƩȚ ǏǊyĭ þǁƤ DžǓ ƕĭǊǴǁƐ þƩȚ Njƈ ƕʓƑƟǊǁƐ .12

.(Jacobzone et all, 1999) ƕşǴƑƨ þNjƨǀǁ ƒ þyŧǁƐ .13

ƔƑĭƟǁƐ ƯDžǊǴ ƕşǂyŦDžǁƐ üDžƐNjyǁƐ :ƒĭǊƑƙ

: ǀƑǊĭDžƑŀĭƻǁƐ DžƣƑyDžǁƐ DžDž ƕĭʓƑǀǁƐ ǀƑĭDžǀǁƐ Ǎǂ Y ǎNjŧƟĭ Ǘ ǏƏƐƤƷ !ƑƜǊ ƱƑǴŀƐ Njƈ üNjƑǊŀ ƕǂƽ -

ŀùǒǁǊƵ Ǐùǁƶ ƧƛƌùƙǑƙ!ƒ ƘǴǈǒǊǴƙǒƽ!ƒǍ ƘǴǈǒƙǍƧƕ!ƒǍ ǇþǴƶǊ!ƒǍ ƟǖǊǕƒ ǇǊ þþƵ ǁǴǇNj

.(D) ǇǑǊǴùƙǒƽǍ ÜþùǒþƠ!ƒ ÜƧǍƽȠƽ!ƒ ÜDžǍǒȠǒǈʓǊ!ƒ ÜDžǍǒȠ!ǴǂǊ!ƒ :ǴnjǊNjD ǇǊ Ǒƙ!ƒǍ DžǴƯƶ!ƒ Ǒƽ ƯǒǕƒ

(Ilich & Kerstetter, 2000)

:(D) DžĭDžƑŀĭʓ -

ÜǀþùǒþƵ ƘƒǍǈȠù! DžǴƯƶ!ƒ ŀƠȚǍ DžǍǒȠ!ǴǂǊ!ƒ ƒ ǴȚǊǋ Ǒƽ ǴǊnjǊ ƒƧǍþ ƔƶǁǑ (þ) ǇǑǊǴǑƽ

DžǂƠƙù!ƒ ƨǒƧƱ ǇƵ DžǴƯƶ!ƒ ŀǒǈ ǏǁƵ ƯǴƽƠ!ƒ Ǒƽ ǴǊǴNj ƒƧǍþ ƔƶǁǑ (þ) ǇǑǊǴǑƽ ǇD ƻǍƧƶǊ!ƒ ǇǊǍ

.(Vieth R et all, 2007) Džþ!ƒ ǇǊ DžǴƯƶ!ƒ ШƧǴƤǍ ýƤƒþ DžǍǒȠ!ǴǂǊ!ƒ ƨƽþƙ Ǒƽ

- [illegible] (D):

1. [illegible].
2. [illegible].
3. [illegible].
4. [illegible].
5. [illegible].
6. [illegible] (Holick, 2007).

- [illegible] (D):

[illegible] (D) [illegible]:

1. (D3) [illegible].
2. (D2) [illegible] (Wolpowitz & Gilchrest, 2006).

[illegible] (D) [illegible] (D) [illegible] (Jones, 2008).

(1) !ҙþ üǸǰɰ

ƕŏþĎǻyƖƐ ƕǂƟþĎƖƐ ƒ ƨƟ (D) ĎǎĎǰƑƗƺ ĎǎĎ ƕŏĎǸǰƖƐ ƖƑɰƑƗƟŰƐ ƕŏĎǰ

2010 ĎǴƶ! (þ) ǇǰĎǴǨǑ! (RDAs) ǴǋǇ Ĭ Ƭ Ăǳ!ƒ ǂǑƑƦƺ!ƒ ǂǑǳǂ!ƒ				
ƕƳƑƬþƖƐ	üĎƟƖƐ Ƴþǂƺ	Ăǩǳƈ	þǀƤ	þĎǻyƖƐ
		ǂǜǑ!Ăþ ǀþǜơĂ 400 ĎƒƧƺĂƧǂǑǳ (10)	ǂǜùǑ!Ăþ ǀþǜùơĂ 400 ĎƒƧƺĂƧǂǑǳ (10)	ƒƧǋƬ 0-12
		ǂǜǑ!Ăþ ǀþǜơĂ 600 ĎƒƧƺĂƧǂǑǳ (15)	ǂùǜǑ!Ăþ ǀþùǜơĂ 600 ĎƒƧƺĂƧǂǑǳ (15)	ƘƒĂǈƪ 1-13
ǂǑ!Ăþ ǀþơĂ 600 ĎƒƧƺĂƧǂǑǳ (15)	ǂǑ!Ăþ ǀþơĂ 600 ĎƒƧƺĂƧǂǑǳ (15)	ǂǜǑ!Ăþ ǀþǜơĂ 600 ĎƒƧƺĂƧǂǑǳ (15)	ǂùǜǑ!Ăþ ǀþùǜơĂ 600 ĎƒƧƺĂƧǂǑǳ (150)	ǂǈƪ 14-18
ǂǑ!Ăþ ǀþơĂ 600 ĎƒƧƺĂƧǂǑǳ (15)	ǂǑ!Ăþ ǀþơĂ 600 ĎƒƧƺĂƧǂǑǳ (15)	ǂǜǑ!Ăþ ǀþǜơĂ 600 ĎƒƧƺĂƧǂǑǳ (15)	ǂùǜǑ!Ăþ ǀþùǜơĂ 600 ĎƒƧƺĂƧǂǑǳ (15)	ǂǈƪ 19-50
		ǂǜǑ!Ăþ ǀþǜơĂ 600 ĎƒƧƺĂƧǂǑǳ (15)	ǂùǜǑ!Ăþ ǀþùǜơĂ 600 ĎƒƧƺĂƧǂǑǳ (15)	ǂǈƪ 51-70
		ǂǜǑ!Ăþ ǀþǜơĂ 800 ĎƒƧƺĂƧǂǑǳ (20)	ǂùǜǑ!Ăþ ǀþùǜơĂ 800 ĎƒƧƺĂƧǂǑǳ (20)	ǂǈƪ 70 ǇǳƧƕǂƊ

- (ƕŏƖǸǰƖƐ ǸƷyƖƐ ƕĎǻưǎĎǻ) ƕŏƺƑǀ ƕŏĎǰ
- .(2010) !ƑưyƖƐ ƕƪƑƪǈ ĎǎĎ ǂǘyƖƐǸ ƕŏƑҙǸǂƖ ƒŏǴƯƖƐ üŏƖǭ :þǭƬĎƖƐ

:!ǸŏƨƖƑǀƖƐ

ɰǘùƵĂ ƴùǈǳĂ ǂǑǳƯƶ!ƒ ǂǊǂ!ƒ ǀĂƧƦ ƷĂǊƕ! ǀþþơǳ!ƒ ǂǑƑƦƺ!ƒ ƧƬǴǈƶ!ƒ ĎǸƊ ĂǸ ĎĂǑƪ!ǴǂƒǂƑ

.ĎǴƯƶ!ƒ ƽƥƧǩ

Ǒù5 %1Ă ǇǴǈƪŰƒĂ ĎǴƯƶ!ƒ Ǒ5 ĎĂǑƪ!ǴǂƒǂƑ ǇĂƨƤǳ Ǉǳ %99 ǑǳƯƶ!ƒ ýǂǑǹ!ƒ ǊưǑĂ

ǑƱǴùǑǩơŰƒ ǇĂƨùƤǳ!ƒ ýǳƵ ýǳƶǑ ĎǴƯƶ!ƒ Ǒ5 ǇƸƤǳ!ƒ ĎĂǑƪ!ǴǂƒǂƑ ǈǇƊ Ǵǳǂ ŰǂǈǑǊ!ƒ ǂƞƪǈŰƒĂ Ďþ!ƒ

.(Heaney, 2000) Ďþ!ƒ Ǒ5 ĎĂǑƪ!ǴǂƒǂƑ ƘǴǑĂǩƪǳ ĬǊƵ ƯǴҙơǊ!

ýǘùP Ǵǆǎŏʅ ǛĂ ǅĂŏʅ!Ǵǂ!ƒ ǇǆǍ ǂŏ5Ǵǂ ƘǴǒǆǂ ƦPǅ ǅǌǆǍ!ƒ ǇǆǍ ǈǇǅ (Heaney, 2000) þǂǅĂ

ǂơù Ʈ Ĭ ùǅƵ ǕǴù5ơǅ! ƧǆƶƵ!ƒ ǅþǀǩ þƶǁĂ ǂŏǆǕƶ!ƒ ǂǅǩǂ!ƒ ǀĂƧƦ ƭŏǀơǩ! Ƨǆƶ!ƒ ǇǆǍ Ĭ!ĂǕƒ ƘƒĂǉʅ!ƒ

ǂùŏĂǆþ!ƒ ǂŏƵĂǕƒ Σǅǂǩ Ĭ!ƒ ĭþǅǩ Ŏǌ5 ǀƧǴư ǅĂŏʅ!Ǵǂ!ƒ ƘǴǒǆǂ Ŏ5 ǀþǴŏƨ!ƒ ǇƒǅǅƵ!ƒ yǆ ǕǅǴǕƶ!ƒ

.Ĭǅǂ!ƒĂ Ǖǂŏ Ăǆþ!ƒ ǂŏƵĂǕƒĂ Ɣǅǀ!ƒ Ĭ!ƍ ǂǀơǘ!ƒ ƧƒƧưǕƒ yǆ ǕǂŋʅǉǕƒ Ă

ǂùŏƦƸǕƒ ǂùǆǕǉǆ ǇǆǍ Ǵǌǌ Ĭ ƮĂǆ!ƒ ƘǴǒǆǂ!ƒ Ɣʅơ ǅĂŏʅ!Ǵǂǅ! ŎǆĂŏ!ƒ ǕǴŏǩơǕƒ Ʃǅǉŏ ǂŏơ

.(2010) ǅǴƵ Ŏ5 ǂŏƦƺǩ!ƒĂ

(2) !5þ üǈǊǕ

ǉĭþǅyǆ ǉǂΘþǅǆ ƒƨΘ !ǈĭƨǆƑǀǆ ǅǅǅ ǉĭǅǈĭǆ ǀƑǕǆǂΘǕǆ ǉĭǅǀ

ǉĭþǅyǆ ǉǂΘþǅǆ	!ǈĭ / !Ʃǂǅ
ƧǌƮǅ 6 Ĭ!ƍ 0 ƴưƧ!ƒ	1000 Ǉ 200
ƒƧǌƮ 12 Ĭ!ƍ 6 ƴưƧ!ƒ	1500 Ǉ 260
Ƨǆƶ!ƒ ǇǆǍ ƘƒĂǉʅ 3 Ĭ!ƍ 1	2500 Ǉ 700
Ƨǆƶ!ƒ ǇǆǍ ƘƒĂǉʅ 8 Ĭ!ƍ 4	2500 -1000
Ƨǆƶ!ƒ ǇǆǍ ǂǉʅ 18 Ĭ!ƍ 9	3000 Ǉ 1300
ǂǉʅ 19-30	1000
ǂǉʅ 31-50	1000
ƧĂǂƦ!ƒ ǇǆǍ ǴǆǴƵ 70 Ǉ 51	2000 -1000
ǂǴǉǕƒ ǇǆǍ ǴǆǴƵ 70 Ǉ 51	2000 -1200
ǂǉʅ70 ǇǆǍ Ƨǁǂǅ	2000 -1200
ƘǴƶưƧǆ!ƒ / ýǆƒĂơ!ƒ ǕƧǆƶ!ƒ ǇǆǍ ǂǉʅ 18 Ĭ!ƍ14	3000 -1300
ƘǴƶưƧǆ!ƒ / ýǆƒĂơ!ƒ ǕƧǆƶ!ƒ ǇǆǍ ǂǉʅ 19-50	2500 -1000

.2010 Û!ǈǂyǂǀ ǉĭǆǕǈǀǆ ǉĭǅĭǊƑǀǕǈ Û Ƨ ǂǕǅǆ ƒǕǀǆ ǊǈyǅǍ ǕǉĭƤƩǂǀǈ ƀƐƤƩǀǆ ǉǅǆưǆǅ :þǊƮǅǆ *

- :!Njĭƨ ǁƑǀǁǁƐ ƕƓƨǆ ǀƑƓƙ ĂǂƳ ǀƑǆNjDžƥNJǁƐ ƥƙƈ

• ƕĭƽƥƣǁƐ ƔƣƩǁƐ ǀƑǆNjDžƥlj

- :DžĭǆNjǂĭƨǁƑǀǁƐ DžNjDžƥlj

LJǆžĂ ÜǂŏpƧƥ!ƒ ƖƥƺƷ!ƒ ljƨƧƽƙ ǂŏǈǆžŪƒ ƯƓǆžơŪƒ LJǆž 32 LJǆž LJĂǂǆž ƥŏƙƕƕ!ƒ ƥƥƶƙǆž LJĂǆžƧNj ĂNj

LJùǆž ýŏǁǀƙ!ƒ ǏǁƵ ýǆžƶŏ ǂŏơ Ü(PTH) ýǆžƶ! Σǂƶǆž LJĂǂŏ LJĂǆžƧnj!ƒ ƒƦNj ýǆžƵ LJƊ ƧǂƦ!Ɠƕ Ƨŏƥƞ!ƒ

ƽùŏƧƱ LJùƵ DžƲƶ!ƒ ƻƓƬƙƧƹ ýǁǀŏĂ ƓǆžǂÜǂŏƥƓƶ!ƒ ǂǆžŏǀ!ƒ LJƵ ljƥƓŏƥƨƹ ƥǈƵ Džƥ!ƒ Ŏ5 DžĂŏƪ!Ɠǂ!ƒ ƨŏǂƧƙ

Ŏùƙ!ƒ LJĂùǆžƧnj!ƒ ƒƦnj! ƘűƕǀƙƪǆžǏǁƵ ĭĂƙơƙ Ŏƙ!ƒĂ DžƓƲƶ!ƒ ǂƞƪǈƊ Ŏ5 ǂǁǂŬƒ ƓŏűƤ!ƒ ƱƓƬlj ƱŏƕƛƙĀ

.(Mone, 2002) Džƥ!ƒ Ŏ5 ƧĂƽƪƽ!ƒĂ DžĂŏƪ!Ɠǂ!ƒ ƨƒƧ5ƹĂ DžƲƶ!ƒ DžưNj ǏǁƵ ýǆžƶƙ

Ŏù5 ƧĂƽƪƽ!ƒĂ DžĂŏƪ!Ɠǂ!ƒ ƒ ƓƬƙǆžƹ ƖƥƓƵƹ ƱŏƕƛƙƕLJŏljĂƙŏƪ!Ɠǂ!ƒ LJĂǆžƧNj DžĂǀŏ5 Ǐǁǂ!ƒ Ŏ5 ƓǆžƊ

Džƥ!ƒ Ŏ5 ƓǆžnjƬǀljĂ ýĂƕ!ƒ Ŏ5 ƖƥƓŏƨĂ Ŏ5 ƧĂƽƪƽ!ƒĂ DžĂŏƪ!Ɠǂ!ƒ ƨƒƧ5ƹ ƖƥƓŏƨ Ŏ!Ɠƙ!ƓƕĂ ÜǂŏĂǁǂ!ƒ ƘƓŏlj!ƒ

.(Wilmore & Costill, 1999)

• ƕĭƽƥƣǁƐ ƔƥƑɯ ƔƣƩǁƐ ǀƑǆNjDžƥlj

ýǂùƬ ǏùǁƵ Ɩƥƺ ƥƞĂƙ LJƓƪljƹ ýǂ ǂƕpƧ ƻƬƙljǆž Ŏ5 NJljƊ Ǐ!ƹ (Martin,2004) ƧŏƬŏ

ƖƧŏƷƬù!ƒ ƨƧŪƒ ǂùƕơ Džùƞơƕ ƥƥƺ ýƕƧƊ ƥƞĂƙ ǂŏpƧƥ!ƒ Ɩƥƺ!ƒ ǏǁƵĂ ÜǂŏpƧƥ!ƒ Ɩƥƺ!ƒ ǏǆžƪƙǂƬƒƧ5

ƓùnjljƊ Ǔƹ ǂùŏpƧƥ!ƒ Ɩƥƺ!ƒ ƽĂ5 ƥƞĂƙ ǂŏpƧƥ!ƒ ƘƒƧƓƞ ƥƥƺ!ƒ LJƊ ƠŏơƬ ÜǂŏpƧƥ!ƒ ƘƒƧƓƞ ƥƥƺ ǏǆžƪƙǂƬƒƧ5

:ǂŏpƧƥ!ƒ ƖƧƓƞ Ɩƥƺ!ƒ ƘƓljĂǆžƧNj DžNjƊ LJǆžĂ .ƇƒƥŪƒĂ ǂƽŏƲĂ!ƒ Ŏ5 ƓǆžƓǆžƙ ƓnjljƵ ǂǁƬƽljǆž

- [illegible] :(PTH)

[illegible] (84) [illegible]
[illegible] (D)[illegible]
[illegible]
[illegible]
[illegible]
[illegible] (D) [illegible]
[illegible] (Martin, 2004) .

- [illegible]:

[illegible] 1 [illegible] %85 [illegible]
[illegible]
[illegible] %0,1.

[illegible]
[illegible] (Knochel, 1999).

[illegible]
[illegible] (2001 [illegible]).

- [illegible]:

[illegible] .(Heaney, 2002)

- [illegible]

[illegible] (D) [illegible] (Pettifor, 2004)

[illegible] (Holick, 2001) [illegible] (15 -10) [illegible] (30-5) [illegible]

3 ... 10 ...

... (D) ...

... (Holick, 2001) ...

...

(2000) Gregg et all ...

[illegible]

[illegible]

(Cummings and Melton, 2002)

[illegible]

[illegible] (Cummings and Blak, 1995) [illegible].

(ţ ĭŒ˥˥ƗƖƐ) hŭĎžưƴƖƐ hʒƑƙƖƖƐ ƨƑĭƽ -

.ĎĩĜƲƶ!ƒ ƗƼĜƛǂ ýƶƽ!Ĝƕ Ʃŏǀŏ ǇĐ ƨƥǀŏ ƒƨĜƕƙƤƒ Ɣ˥Ʊƙŏ ƱƧďž!ƒ ƒƦǌ! ƭŏƿƥ!ƒ ƒ ŏƤƬƙ!ƒ Ǉƍ

:Ĝǌǉǆž ƗŏďžƲƶ!ƒ ƗƼĜƛǂ!ƒ ƩĜŏǀ! ƗơĜƙďž ƭƨƱ ǀƥƵ Ɩ!ĜǉǊ

.ƗŏǉŏƖ!ƒ ƗƶƬŰƒĂ ǇĂƙĂƽ!Ĝƕ ƗƥĜƱ!ƒ ĭƥĜơŰƒ ƒ Ĝ˥ƙďžŰƒ ƩĜŏǀďž -

.(DEXA) ƗŏǉŏƖ!ƒ ƗƶƬŰĜƕ ƗƥĜƱ!ƒ ƜĂƥƨďž!ƒ ƒ Ĝ˥ƙďžŰƒ ƩĜŏǀďž -

.ƨƙĂŏƕďžǂ!ƒ ĎžƒƥƤƙƖƕ ǑďžǂǃƑ ǑƶƱǀďž!ƒ ƨŏĂ˥ƙ!ƒ -

ƗŏǉŏƖ!ƒ ƗƶƬŰĜƕ ƗƥĜƱ!ƒ ƜĂƥƨďž!ƒ ƒ Ĝ˥ƙďžŰƒ ƩĜŏǀďž ĎžƒƥƤƙƖƍ Ďžƙ ƥƿĂ

ƨĜƕƙƤŰƒ ƨƕƙƶŏ ǋǉŰ ŰƗƖƒƨƥ!ƒ ǉƦǋ Ǒƽ (Dual energy X- ray absorptiometry) (DEXA)

ƒƥƞ ƗƖŏƑư ƗŏďžǂƑ ĎžƥƤƙƖŏ ǋǉŰ ǇďžĆ ƨĜƕƙƤƒ ǋǉĂǂ! ƭƨƲǉ ŰƱƨʒ!ƒ ƒƦǌ! ǔƵĂŏƬ ƨƛǂŰƒĂ ǔƥƥƬ ƨƛǂŰƒ

(500) Ĭ!ƒ ĜŏĂǉ˥ ƱƨƶƙŏǇĐ ƒ ƤƬƖ! ƠďžƖŏ ĜďžǉŏƕRem m (1.2) ƸƖƕƙ ƗŏǉŏƖ!ƒ ƗƶƬŰƒ Ǉďž

ǇƥĜƶďž!ƒ Ǉďž ĎžƲƶ!ƒ ăĂƙơďž ĬƖƵ ƻƨƶƙ!ƒ ƗŏǉĜǂďžǫĂ ŰƗƖƕĜƱƙďž ǊƑĜƙǇƕ ǉƨƒƨǂƙ ƗŏǉĜǂďžǫ ŰRem m

ýǂŏǌ!ƒ Ǒƽ ƗŏƨĂơďž!ƒĂ ƗŏƽƨƱ!ƒ ǅƒƨƞŰƒ ýǂ Ǒƽ (BMD) ĎžƲƶƖ! ƗŏǉƥƶďžƖ!ƒ ƗƼĜƛǂ!ƒ ƩĜŏƥĂ Ű(BMC)

.(Dreux & Delmas , 2001) ƗŏƶŏƕƱ!ƒ Ɣ˥ǉ!Ĝƕ ĜǌƙǉƨĜǀďž ĬƖƵ ýďžƶ!ƒĂ ǑďžƲƶ!ƒ

ǋ˥ĜŏƥĎžƙĜďž ĜǌǉǆžŰĎž˥ƞ!ƒ Ǉďž ƭƱĜǉǆž ǀƥƵ Ǒƽ ƗŏďžƲƶ!ƒ ƗƼĜƛǂ!ƒ ƩĜŏǀ! ĎžƥƤƙ˥ŏ ƩĜŏǀďž!ƒ ƒƦǋĂ

:Ɨ˥ƒƨƥ!ƒ ǉƦǋ Ǒƽ

L4 ǇJ) ĭƨùǀƽ!ƒ ƥĂďžƶ!ƒ Ǒƽ ƗŏǉƱǀ!ƒ ƘƒƨǀƽƖ! .1

(L1

(5) ĎžƥƨýǂƬ!ƒ Ǒƽ Ĝďžǂ

(Kanis,2002).(ƦƤƽ!ƒ ƗďžƲƵ ƭǉƵ Ɨ!ƱǉďžƗ) .2

(L4 ǇJ L1) ĭƨǀƽ!ƒ ƥĂďžƶ!ƒ Ǒƽ ƗŏǉƱǀ!ƒ Ƙƒƨǀƽ!ƒ (5) ĎžƥƨýǂƬ!ƒ

ǈùďž lĈƒƨǃ!ƒ ƦƤƉ Ƚ!Ĝơ Ŏ5 ƒ Ăơ5dž!ƒ Ƚöƶ ưĂĂ (DEXA) ƨĜnjŋ lƨĂƮ ƨnjƲö (6) ƊƿƧ ýǂƮ!ƒĂ
.ƦƤ5!ƒ ȽdžƲƵ ƪǉƵ ȽǃƱǉdž



(6) ƊƿƧ ýǂƮ!ƒ



ƘĜùƪĜöǃ!ƒ ǈJdž ƪƥƉ ĜnjǉĂǂ ȽƪƒƨƥǃƒljƦNj Ŏ5 ƦƤ5!Ĝƪ ȽǃǐƶƙdžǃƒƘĜƪĜöǃ!ƒ ǏǐƵ ƥĜdžƙƵǗƒ Ɗƙ ƥpĂ

. ǐƨǃ5!ƒ ƥĂdžƶ!Ĝƪ Ƚǃǐƶƙdžǃƒƒƒ

ƥĂùdžƶǃ! Ƚùöd žƲƶ!ƒ Ƚ5ĜƛǂǃƒƘĜƪĜöp Ƚpƥ ǈƉ (Cummings & Blake, 1995) ƥǂƉ Ƚöơ

ƘĜƪĜöp ǈƎ5 ƒƦ! ǛŎdžƲƶ!ƒ ýǂönj!ƒ ƜƨĜƤ ƘĜƪǃǂƙĂ ǛȽödžƲƵ ƥƑƒĂƨ ƥĂŋĂ ýĜơ Ŏ5 Ʊ5ƤǉƙǐƨǃƼ!ƒ

ǈJùdž Ƚùö!ĜƤ ȽöǃdžƵ ŎNjĂ ǛăƨƤƉ ƴƥƒĂdž ƩĜöp ǈJdž ƋǈǉƙǃƒŎ5 ăĂƥƉ ƦƤ5!ƒ ȽdžƲƵ ƪǉƵ ƪǉƵ ȽǃƱǉdž

ĈĜǃǃƙùƪǗƒ ƴùưĂ ƒĂơ5dž!ƒ ƦƤƙö ǈƉ ƔŋöƦƤ5!ƒƪǉƵ ȽǃƱǉdž! ƒơ5!ƒ ĈƒƨŋƍƥǉƵĂ ǛĜdžĜdžƙ Ɗ!ǕƒĮ

DžĂùlk LJD Ɨù!ŭ! ĬLjʅkŏ Ĭkơ (10 IJ 5) lþdž! ƗŏLjŏʅ!ƒ ƗƶTŰƒ ƧŏƧʅ NhTŏ ƠƱʅ ĬlƵ ƧnjU!ƒ ĬlƵ

.Džʅɳl! Ŏơʅdž!ƒ ƧŏĂƮk!Ǥh

:ǤdžNjĂ DžǤUƶ!ƒ ƗTǴTNj ƒ ŏƤTk! ǁ!ŖĂ ƗŏdžUƶ!ƒ Ɨ5Ǥλǂ!ƒ ƩǤŏl! LJŏƧǤŏƶdž ǁ!ǤLjNjĂ

ƘǤLjǤŏh!Ǥh ƱǤhkƧŰǤh ǤnjLjƵ Ƨhƶdž ĭƧǤŏƶdž!ƒ ƻƒƧơLjŰƒ ƘƒƧŏþlk ŎNjĂ :(T-score) T ƘƒƧŏþlk .3

.Ʃdŏ!ƒ LJʅ ýhp ƘǤŏƶŏhƱ!ƒ ǤǤʅLj!ƒ Ŏ5 ƗŏƶɳƧdž!ƒ

ÜƧdžƶ!Ǥùh ƱǤhkƧŰǤh ǤnjLjƵ Ƨhƶdž ĭƧǤŏƶdž!ƒ ƻƒƧơLjŰƒ ƘƒƧŏþlk ŎNjĂ :(Z-score) Z ƘƒƧŏþlk -

Džþùlk ydž DžǤUƶ!ƒ ƗTǴTNj ƧĂʅǂ lþǤŏɀ! ɫƧULj (Z) ƘƒƧŏþlk ĬlƵ (T) ƘƒƧŏþlk DžƒþƤkʅǫ ýưɞŏĂ

.(Delmas , 1997) (Z) ƘƒƧŏþlk DžƒþƤkʅǂh Ǥnj5ǴTkǂǫ Džkŏ LJ! Ŏk!ƒĂ ÜƧdžƶ!ƒ

- :Ŏlŏ Ǥdžǂ (T) ƘƒƧŏþlk (WOH) ƗŏdžǤƶ!ƒ ƗơƮ!ƒ ƗdžULjdž Ƙ5LjƮ þpĂ

.1 ƒŖǫ ƘLjǤǂ (T) Ƨhǂ ĂD ĭĂǴʅŏ LJdž (1-) LJ5 Ɨ!Ǥơ DžǤUƶ!ƒ ăþ! ƤT!ƒ ƒ ǂLJĂǂk ƗŏƶŏhƱ.

.2 ƒŖǫ ƘLjǤǂ (T) LJŏh (1- Ă 2.5 IJ) LJ5 ƤT!ƒ ƒ ǂLJĂǂŏ dž ƔǴƮ lLjh ƒ DžǤUƶ!ƒ.

.3 ƒŖǫ ƘLjǤǂ (T) ýpD LJdž (2.5-) ƒŖnj5 ŎLjƶŏ LJD ƤT!ƒ ƒ dž ƔǴƮ ƗTǴTnjh DžǤUƶ!ƒ.

[illegible]

[illegible] 90 [illegible] .(2006 [illegible])

[illegible] .(Sinaki et all, 2004) [illegible]

[illegible] .(Giangregorio & Blimkie, 2002) [illegible]

hƲĜƑƨǁƐ ǀƑƨƐƥƣǁƐ

hƲĭĜƥƴǁƐ ǀƑƨƐƥƣǁƐ

(2005 ǛƑDŽǗ) hƲƨƐƥƣ.1

ƚùƼĜƛǂ Ĭùǁƶ ýĜùǀƛǕƒ ƘĜƅƟƨƥùƙ ƨƟƛƋƙ Ĭ!ƒ ƻƨƶƙ!ƒ ƻƥǌƅ ƚƪƒƨƥ (2005) ĜǆǗ ăƨƞD

.Džƥǀ!ƒ ǀƨǂ ƐƬĜǉ ăƥ! ĭƨĜǌǆ!ƒ ĈƒƥǕƒ ăĂƙƪǆĂ ƚƟǁ ƣƶ!ƒ ǀĂǀ!ƒĂ DžĜƱƶ!ƒ ǇƥĜƶǆ ăĂƙơǆĂ

ƚùǉƟƶ ƨĜƟƙƤƍ Džƙ ƥƤĂ ƚƪƒƨƥ!ƒ ƚƶƟƅƷĂ ƔƪĜǉƙƟ NJǉĂǂ ƟƅƟƨƞƙ!ƒ ǋǌǉǆ!ƒ ƚơĜƅ!ƒ DžƥƤƙƪƒ ƥƤĂ

ǇùǆƨƬùǆ Ɵ5 ƟƣĜƟƨ!ƒ ƚƟƤƨƬ!ƒ ĭƥĜǉƅ ǀƨĂǂ!ƒ ƚƪƨƥǆƅ ǇƟƑƬĜǉ!ƒ Ǉǆ ƚƟƥǆƶ!ƒ ƚǀƟƨƷ!Ɓ ƚƪƒƨƥ!ƒ

Ĭù!ƍ DžǌǆƟƪùǀƙ Džùƙ ƐùƬĜǉ (30) ƚùǉƟƶ!ƒ DžƒĂùƤ Ʃƅ ƥƤĂ ƚǉƪ (12) Ǉƪ Ƙơƙ ƚƟƨǆƶ!ƒ ƚǁơƨǆ!ƒ

.(ƚƷƅĜƣ!ƒĂ ƚƟƅƟƨƞƙ!ƒ) ƚƶĂǆƞǆ ý!! ƐƬĜǉ (15) ýƥƒĂƅ ǇƟƙƶĂǆƞǆ

:Ĭ!ƒ ƚƪƒƨƥ!ƒ ǉƦǋ ǋƑĜƙǉ ƘƨĜƬDĂ

ăĂùƙơǆĂ ƚùƼĜƛǂ ƘƒƨƟƺƙǆĂ ĭĂǁƶ!ƒ ƻƨƷǁ! ƚƟǁ ƣƶ!ƒ ǀĂǀ!ƒ ǇƟƅ ƚƟƥƨƷ ƷĜƅƙƨƒ ƚƤǕƶ ǁ!ĜǉǋƑ .1

.ĭƨǀƺ!ƒ ƥĂǆƶ!ƒ DžĜƱƶ ǇƥĜƶǆ

ǇƥĜùƶǆ ăĂùƙơǆĂ ƚùƼĜƛǂĂ ƚƟǂƨơ!ƒ ƘƒƨĜǌǆ!ƒ ĈƒƥD ăĂƙƪǆ ǇƟƅ ƚƟƥƨƷ ƷĜƅƙƨƒ ƚƤǕƶ ǁĜǉǋƑ .2

.DžĜƱƶ!ƒ

.ýĜǀƛǕƒĂ ƘĜǆĂĜǀǆ!Ɓ ƟƨƙǀƩ!ƒ ǋǆĜǉƨƅ!ƒ ƫƟƅƷƙ ǀƨƙ5 ýƒĂƷ ƚǉƟƶ!ƒ ƥƒƨ5Ǖ ƘĜƅĜƬƍ ĭD ƚƥơƟ Dž!.3

(2004 Ûl ƐƣǐƓY) ƛƨƐƥƣ .2

ΘƧùƙlƊž ǑǛǒNjƌùƙ ǑƛǒƧƥƙ ǋƊžƓǉƧƛ ƧλƉ Ǐ!ǫ ƻƧƶƙ!ƒ ƻƥnjƛ ƗƔƒƧƥ (2004) ƘƒƥǒƛƵ ƘƧƞƉ

.ƊžƓƲƶ!ƒ ƾpƧƙƛ ƘƓƛƓƬƊž!ƒ ƇƓƔǉ!ƒ ƥǉƵ ƊžƲƶ!ƒ Ƌ5ƓλǂlƥƓǒƨ ǏƊƵ

ǇǍùǂƙ ƗǒơǍ ƗƔƒƧƥ!ƒ ƗƶǒƛƱǍ ƔƓǉƙǒ NJǉǍǂ ǑƛǒƧƞƙ!ƒ ǋnjǉƊž!ƒ ƊžƒƥƤƙƔƐƛ ƗλơƓƛ!ƒ ƘƊžƓp ƥpǍ

.ǇƥƧǕƒ Ǒ5 ƊžƓƲƶ!ƒ ƗƬƓƬnjƛ ƘƓƛƓƬƊž!ƒ ƇƓƔǉ!ƒ ƴǒƊžƞ ǇƊž ƗƔƒƧƥ!ƒ ƴƊžƙƞƊž

ΣƓùǒl! (DEXA) ƗǒǉǒƔ!ƒ ƗƶƬǕƓƛ ƗpƓƱ!ƒ ƜǍƥƨƊž!ƒ ƒ ƓƬƙƊžǕ ΣƓǒlƊž ƊžƒƥƤƙƔǫ ƧƓǒƙƤǫ ƊžƙǍ ƓƊžǂ

. Ƙƒƥǒƙ!ƒ ǎƥ! ƗǒƊžƲƶ!ƒ Ƌ5ƓλǂǃƒǏ

ƗùǒǉƥƧƉ lƥǒùƔ (18) ǇƊž NJǉǍǂƊž ƗǉǒƶƸ!ƒ ƘǉƓǂ ƗǒơƗǒƥƊžƶ!ƒ ƗlǒƧƱ!ƓƛƗƔƒƧƥ!ƒ ƗǉǒƵ ƧƓǒƙƤǫ ƊžƙƥpǍ

(12) ƗùǒƛǒƧƞƙǍ ƘƒƥǒƔ (6) ƗƱƛƓư ǇǒƙƵǍƊžƞƊž Ǐ!ƒ ǇnjƊžǒƔlƙ ƊžƙƊžƓƲƶ!ƒ ƗƬƓƬnjƛ ƘƓƛƓƬƊž!ƒ ǇƊž

.lƥǒƔ

:Ǐ!ǫ ƗƔƒƧƥ!ƒ ǉƦNj ǋƑƓƙǉ ƘƧƓƬƉ ƥpǍ

1. ǕƥƞǍƙ ƾǍƧ5 ƘƒƦ Ɨ!Ǖƥ ơǫ ƘǒƑƓƬơǫ ƗǒƛǇƒƓƛƘǕƒǇ ǑùƊƛl! ǇǒƧƓƛƙƤǕƒǍ ƧƓùƛƙƤǫ ƥùƶƛ!ƒ ǏƥƓƛ!ƓƛƗƛƔùƓƛ

.ƗƱƛƓư!ƒ ƗƵǍƊžƞƊž!

2. ƥƞǍƙ ƾǍƧ5 ƘƒƦ Ɨ!Ǖƥ ơǫ ƘǒƑƓƬơǫ ƗǒƛǇƒƓƛƘǕƒǇ ǑƊƛl!ƒ ǇǒƧƓƛƙƤǕƒǍ ƧƓƛƙƤǫ ƥƶƛ!ƒ ǏƥƓƛ!ƓƛƗƛƔùƓƛ ƗƛƔùƓƛ ƥƒƧù5Ǖ

.ƗǒƛǒƧƥƙ!ƒ ƗƵǍƊžƞƊž!ƒ Ǒ5 ƗƔƒƧƥ!ƒ ƗǉǒƵ

3. ƥƞǍƙ ƾǍƧ5 ƘƒƦ Ɨ!Ǖƥ ơǫ ƘǒƑƓƬơǫ ƗǒƛǇƒƓƛƘǕƒǇ ǑƊƛl!ƒ ǇǒƧƓƛƙƤǕƒǍ ƧƓùƛƙƤǫ ƥùƶƛ!ƒ ǏƥƓƛ!ƓƛƗƛƔùƓƛ ǇǒùƛƓ

. ƾǍƶƛ!ƒ ƧƓƛƙƤǕƒ Ǒ5 ƗƱƛƓư!ƒǍ ƗǒƛǒƧƞƙ!ƒ ǇǒƙƵǍƊžƞƊž!ƒ

(2002 [illegible]) [illegible] .3

[illegible] (2002) [illegible] (6) [illegible] (30) [illegible] (5) [illegible] (55-45) [illegible]

[illegible]

.1 [illegible]

[illegible] %2.2 [illegible] .%2.1 [illegible]

[illegible]

(**Maggio et all** ,2012) [illegible] .1

[illegible] (Maggio et all ,2012) [illegible]

[illegible] (9) [illegible]

[illegible] (BMD)

[illegible] 32 [illegible] 27 [illegible]

[illegible] (10,5 [illegible] 2,5) [illegible]

:[illegible]

[illegible]

.[illegible]

(**Atkinson** et all, 2011) [illegible] .2

[illegible] (2011) [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

.[illegible]

(**Ieczenia**, 2010) [illegible] .3

[illegible] (2010) [illegible]

[illegible] 8 [illegible]

[illegible]

[illegible]

[illegible]

.[illegible] D [illegible]

(**Kemmler et all, 2005**) [illegible] .4

[illegible] (**Kemmler, 2005**) [illegible]

[illegible]

[illegible]

[illegible] (48) [illegible] (30) [illegible]

[illegible] (38) [illegible]

[illegible] (D) [illegible]

:[illegible]

[illegible]

.[illegible]

(Kimberly et all, 2000) ĎžŇĵƥƢǀŇĵ Ĭǁƥǵĩ ǁƶƨƐƥǫ .5

ǇǊƧǴùďžǩ Ƨùƛ ƚƧƶž Ĭ!ǫ ƘƼƥŇĵ ƗƮƒƧƥ (Kimberly, 2000) ǇĂƧƤċĂ Ŏ!ƧǁžǒƗ ăƧƞ

ĈǴƮùǇ!ƒ ăƥù! ΥĂǁùƮ (32) ýűùƤ ǇƨƒĂķ!ƒĂ ƗǒƗǒǩǇǒƗĂƨǒǕƒĂ ƗǒƗǒďžǴǇǒƥ!ƒ ǇĂ!ƒ ĬǁƵ ƗďžĂǴǀďž!ƒ

(Ɨǁǒƨƞǩ 16 ÜƗƱǁǴư 8) ǇƧďžǫ (24) ƘƗƧǴƬ ƗǒƠ ÜďžǴƱƶ!ƒ ƗƬǴƬŇĵĂ ďžƱƶ!ƒ ǇƒƥǀƼǁ ƘǴǁǴƮďž!ƒ

:ƗƮƒƧƥ!ƒ ǇǰŇĵ ǋƑǴǩǇ ƘƧǴƬ ƗǒƠ ƗǒƗƧƠ!ƒ ƗďžĂǴǀďž! ŎǁǒƧƥǩ ǋďžǴǇƧǁ Ŏ5

ƠǴƮù! (%57) Ƙùƺǁ ƗǒƮǒƑƧ ƗǁƮǇǁĂ ƗƵĂƼƧďž!ƒ ăĂƮǀ!ƒ ǇƒƨĂǕƒ Ŏ5 Ɨ!ƒƥ ǇƥǴǒƨ ƘƧŇƱ .1

ƗǁǒƧƞǩ!ƒ ƗƵĂďžƞďž!ƒ

ăƥǇ Ǵùďžďž ƗǒƗǒďžǴǇǒƥ!ƒ ǇĂ!ƒ Ŏ5 Ƨǒǒƺǩ ƧŇƱ ǴďžǇǒǁ , ƗǒƗǒǩǇǒƗĂƨǒǕƒ ǇĂ!ƒ Ŏ5 Ƨǒǒƺǩ ĭǇ ƧŇƱǒ ďž! .2

.ƱĂǀƮ!ƒ ƘǓǴďžǩƠǫ ǇďžýǁƥǴďžďž ǇƨƒĂķ!ƒ Ŏ5 ǇƮƠǩ ƧĂŇƱ Ĭ!ƒ

(Brendan et,all, 2000) ĎžŇĵƥƢǀŇĵ ĎžǫďžƐƥǴ ǁƶƨƐƥǫ .6

ǇƥùƬ Ƨùƛ Ĭù!ǫ ƻƧùƶķ!ƒ ƻƥŇĵǁ ƗƮƒƧƥ (Brendan, 2000) ǇĂƧƤċĂ ǇƥǇƒƧǁ ăƧƞ

ƗǇùƮ (65-45) Ƨùďžƶǁ ƘǴǇƮďž!ƒ ĈǴƮǇ!ƒ ăƥ! ďžĂǒƮ!ǴƗ!ƒ ýĂƠǩĂ ǴŇǩĂƥĂ ďžƱƶ!ƒ ƗƼǴƛƗ ĬǁƵ ǇǒƧďžķ!ƒ

(24) ǇƥùĎž! ǇƥƬù!ƒ ƯƼƤǇďž ŎƬďžĂ ǇƥƬ!ƒ Ɨǒ!ǴƵ ǇǒƧǴďžķ! ǇưƧƶǩ ǇƧďžǫ (64) ǇŇĵƥƥƵ ƩǁǑ Ŏķ!ƒĂ

ƘǴƗƧǴƬùďž!ƒ ďžǒƮǀǩ ďžǩ ƥƥĂ ƗǒǇƱǀ!ƒ ƗǀƱǇďž!ƒ Ŏ5 ǇƥǴƶďž!ƒ ĬǁƵ ǴďžŇǇďž ýƗ ƧǒƛǩĂ ăƥďž ƗƼƧƶďž! ΥĂǁƮ

ƗùƵĂďžƞďžĂ ÜŎƬùďž!ƒ ΣƧǴďžǩ ƗƵĂďžƞďžĂ ÜƗƼǒƼƤ!ƒ ýǴǀƛǕƒ ǇǒƧǴďžǩ ΣƧǴďžǩ ƗƵĂďžƞďž Ĭ!ǫ ƟǒƑƒĂƬƵ

ŎƬùďž!ƒ ƘùƮƧǴďž ƗƵĂďžƞďžĂ ÜƘǴǇĂďžƧŇ!ƒ ýƑƒƥǁ ƜűƵ ďžƒƥƤǩƮƒ Ĭ!ǫ ƗƼǴưǫ ýǴǀƛ ǇǒƧǴďžǩ ΣƧǴďžǩ

:Ĭ!ƒ ƗƮƒƧƥ!ƒ ǇǰŇĵ ǋƑǴǩǇ ƘƧǴƬĂ ÜƘǴǇĂďžƧŇ!ƒ ýƑƒƥǁ ƘďžƥƤǩƮƒĂ

.ďžƱƶ!ƒ ǇƥǴƶďž Ŏ5 ǇƮƠǩ ĭǇ ƧŇƱǒ ďž! ŇǇǇ .1

.ƧŇƱ!ƒ Ƙűưƶ! ƗǒƗǒǩǇǒƗĂƨǒǓƒ ǇĂ!ƒ Ŏ5 ǇƮƠǩ ǁ!ǴǇŇĵ .2

(Walker, 2000) ƥǀǁǋ ǆƨƐƥǫ .7

ǋǆǅǕùǉƧǆ ǂùǒǁƵǅ5 ǂù5ƧƶǆǆǍ!ǫ Ƙ5ƥǋ ǂƪƒƧƥ (Walker, 2000) ǇǍƧƤƈǍ Ƨǂ!Ǎ ǎƧƞǅ

.ǋǇǆǆ Ɯǘƶ!ƒǍ ǅǅǕƱƶ!ƒ ƭƿƧƙ ƲƧǆǆ ǇǆǆǂǒǕƿǍ!ƒ Ǒ5 ǇǒƬ ƬƤƙǆǆ ƻƒƧƬǫ ƘơƙǇǒƧǕǆǆƙ

ƦùǇǆǆ ƒƥǇǂ /ǍƙǇƧǍƙ Ǒ5 ǶǒǋǆƙƟƒ ǂƪƪƋǆǆ Ǒ5 ǅǆƥƤƙƪǆǆ!ƒ ǋǆǅǕǇƧǆǁ! ǅǒǒǀƙ ǂƪƒƧƥ!ƒ ƘǇǆǆƲƙ ƥƿǍ

Ʃ ùǆǆƤ ǀƥùǆ! ƘǕƪùƪƋǆǆ!ƒ Ǒ5 ǇǒǁƞƪǆǆƟƒ Ǉǆǆ ǂƲǒƧǆǍ Ʋ ǒƧǆǆ (89) ǂƶǆǕƙǆǆ ǇƵ (1983) ǅǕƵ

ǂƪùƪƋǆǆ!ƒ ƻƒƧùƬǫ ƘùơƙǇǒƧǕùǆǆƙ!ƒ ǋǆǅǕǇƧǆ! ǂƶƲǕƤ!ƒ ǂƵǍǆǆƞǆǆ!ƒ ǋƑǕƙǇ ǂǇƧǕǀǆǆ ǅǆƙǍ ǗƘƒǍǇƪ

:ǇǅǂƪƒƧƥ!ƒ ǇƦǋ ǋƑǕƙǇ ƘƧǌƱǅ ǂǒơ ǗǅǆǋƪƽǇǅ ƒǍǆƧƥǒ ǇǅƒǍƧǕƙƤǫ ǇǒƦǁ!ƒ Ǎ ƲƧǆǆ!ƒ Ǉǆǆ ǂƵǍǆǆƞǆǆǍ

.ƦƤ5!ƒ ǍǁƵǅǍ ǂǒǇƱǀ!ƒ ǂǀƱǇǆǆ!ƒ Ǒ5 ǅǆƱƶ!ƒ ǇƥǕƶǆǆ ǎǍƙƪǆǆ ǍǁƵ ƘƱ5Ǖơ ƥƿ ǇǒƙƵǍǆǆƞǆǆ!ƒ ǘǂ .1

ǂǆǕù ƬǗƒ Ǒù5 ƲǕ5ƤǇǫ ǁǕǇǋ Ǉǅ ǇǒǆƙǇǒƙƵǍǆǆƞǆǆ!ƒ ǘǂ! ƘƒǍǇƪ Ʃ ǆǆƤ ǀƥǆǆ! ǂƶǆǕƙǆǆ!ƒ ƥƶǆǍ .2

.ǇǒƙƵǍǆǆƞǆǆ!ƒ ǘǂ ǎƥ! ƘǕƿƨǆǆƙ!ƒǍ ƧǍƪǂ!ǕǆǍ

(1991 Ǜ Ƨ ǆƥǕ) ǆƨƐƥǫ .8

Ǎù!ƒ ǇǁƬǍ Ǉǆǆǆǆ ǀƥǒƪ (120) Ƙƺǁǆ ǂǇǒƵ ǍǁƵ ǂƪƒƧƥ (Prince, 1991) ƩǇƧǆ ǎƧƞǅ

ƘǕƵǍǆǆƞǆǆ Ǎ!ǫ ǇǕƪǇ!ƒ ǷǒƨǍƙ ǅǆƙ ǂǒơ ƺƪƧ!ƒ Ǒ5 ǂǒǆǆƱƶ!ƒ ǂ5ǕƛǂƒƲ ǕǅƤǇǁǆ ƘǕǆǕƬǆǆǍ Ʃǆǒ!ƒ Ǉƪ

:Ǒ!ǕƙƒǍơǇ!ƒ ǍǁƵ

- ǂƵǍǆǆƞǆǆ!ƒ Ǎ!ǍǕƒ (41) ǕǋƥƥƵǍ ǀƥǒƪ ǅǆǍǀƙ ǂƪƧǕǆǆǆǆ ǇǒƧǕǆǆƙ!ƒ ǂǒƲǕǒƧ!ƒ.
- ǂƵǍǆǆƞǆǆ!ƒ ǂǒǇǕƛ!ƒ ǂƥƥƵǍǆǆ (39) ǀƥǒƪ ǇƪƧǕǆǆ ǇǒƧǕǆǆƙ!ƒ ǂǒƲǕǒƧ!ƒ ǂ5ǕùƲǫ ǂù!ǫ Ǎ ǷǍǕùǇƙ
  .ǅǆǍǒƪ!Ǖǂ!ǕǆǍ ǂǒǇƸ ǂǒ5ǕƲǫ ƘǕǆƞǍ
- ǂƵǍǆǆƞǆǆ!ƒ ǂƛ!Ǖƛ!ƒ ǕǋƥƥƵǍ (40) ǀƥǒƪ ǇƪƧǕǆǆ ǇǒƧǕǆǆƙ!ƒ ǂùǒƲǕǒƧ!ƒ ǍǇƙǇǕù ǇǂǍǕù ǋƧǆǆǍǇǕù Ƙ
  .ǇǒǁƪƧƙƞǍ ǇǍƧƙƪƞǍƧǆ!ƒǍ ǗƒƪƙƧǍ

:Ĭ!ǫ Ɨʅƒƨƥ!ƒ ǉǲǋ ǋƑǴǨǈ ƘƧǴƬƊĂ ǇǑǆǴƵ ǉƥǆ! Ɨʅƒƨƥ!ƒ ǉǲǋ ƘƧǆǨʅƒ Ɨǒơ

ǇƗ!Ă ƗƛǴƛ!ƒĂ ƗǑǇǴƛ!ƒ ƗƵĂǆƞǆ!ƒ ǇǆǓ ý Ɨ! ƗʅǇ!ǴǊ ǊƑǴƱǊĂ ǊǇǆǓ ƗǑǴƥĂ!ƒ ǇƗǆƊ ǆƱƶ!ƒ ǇƒƥƖ5 ǇƊ

.ƗǑǆƱƶ!ƒ ƗǨƗ!ƒ ǉƥǴǑƨ Ŏ5 ƗǑƵǴ5 ƨƛƗƊ ƗƛǴƛ!ƒ ƗƵĂǆƞǆ!ƒ

ǛƓùǆǗ) Ƚù ƪƒƧƥǂ ǄǆƓǓƶ!ƒ ǂƬƓƬǋ ƳǍ ư Ǎǆ Ƙ!ǍƓǉ ƓǌǉƊ ƥƞǉ ǂǁƕƓƪ!ƒ ƘƓ ƪƒƧƥ!ƒ Ư ƒƧƶƙ ƪǁƕ

Ƙù!ǍƓǉǍ Ɠùǆǂ (Maggio et all, 2012) ǇǍƨùƤƈǍ Ǎöƞ ƓǆǍ (2004 ǛƘƒƥöƕƵ)Ǎ (2005

ý ư Ɠ5) ǂƪƒƧƥǂ ǂöǆǓƶ!ƒ ǂ5ƓƛǂƓ!ƒ ƖƥƓöƨ Ǒ5 ƘƓǉöƧǆƙ!ƒǍ Ǒǉƥƕ!ƒ ƱƓƬǉ!ƒ ǄƒƥƤƙƪƍ ƧƛǄ ăƧƤǄ ƘƓƪƒƧƥ

(Ieczenia, 2010) Ɠǉöƨ öǄǍ (Maggio et all, 2012) ǇǍƧƤƈǍ Ǎöƞ ƓǆǍ (2002 ǛǑǆƓƪǍ

ǇǍƨùƤƈǍ ǇǍƪùǉǂƙƒ ǂùƪƒƧƥ Ƙ!ǍƓǉ Ɠ́ ư öǄ (Kimberly et all, 2000) ǇǍƧƤƈǍ Ǒ!ƧƕǆöǂǍ

.ǂƛơƓƕ!ƒ ǊƕƘǆƓƥ Ɠǆ ƒƦǋǍ ǛǄƓǓƶ!ƒ ǂƬƓƬǋǍ ǂöƦƺƙ!ƒ ƳǍ ư Ǎǆ (Atkinson et all, 2011)

ǇǍƪùǉǂƙƒ ǂùƪƒƧƥ ƇƓǉƛƙƪǁƕ ǂǁƕƓƪ!ƒ ƘƓ ƪƒƧƥ!ƒ ýöǆƞ Ǒ5 ǑƕöƧƞƙ!ƒ ƝǌǉǆǄ!ƒ ǄƒƥƤƙƪƍ ǄƙƥǍ

ǊǆǆƥƤƙù ƪƒ Ɠùǆ ƒƦǋǍ ǛǂƓơ!ƒ ǂƪƒƧƥ ƝǌǉǆǄ ǄƥƤƙƪƍ ǂöơ (Atkinson et all, 2011) ǇǍƧƤǍ

.(ǑƕöƧƞƙ!ƒ ƝǌǉǆǄ!ƒ) ƓǌƙƪƒƧƥ Ǒ5 ǂƛơƓƕ!ƒ

(2005 ǛƓǆǗ) ǂƪƒƧƥǂ ǂöƥǆƶ!ƒ ǂǁöƧƱ!Ɠƕ ǂǁƕƓƪ!ƒ ƘƓƪƒƧƥ!ƒ Ư ƶƕ ƘƓǉöƵ ƧƓöƙƤƍ ǄƙǍ Ɠǆǂ

ǇǍƨùƤƈǍ ƒǍöƞƓùǆ ǂƪƒƧƥǂ ǂƱöƪƕ!ƒ ǂöƒƒǍƬƶ!ƒ ǂǁöƧƱ!ƒ ƘǆƥƤƙƪƍ ăƧƤǄǍ (2004 ǛƘƒƥöƕƵ)Ǎ

.ƓǌƙƪƒƧƥ Ǒ5 ǂƛơƓƕ!ƒ ǊǆǆƥƤƙƪƍ Ɠǆ ƒƦǋǍ (2012)

ƥƧ5ǉǆ ýǂƬƕ ǂöǆǓƶ!ƒ ǂ5ƓƛǂƓ!ƒ ƖƥƓöƨ Ǒ5 Ǒǉƥƕ!ƒ ƱƓƬǉ!ƒ ƧƛǄ ǂǁƕƓƪ!ƒ ƘƓƪƒƧƥ!ƒ Ƙ ư Ƨƶƙƪ Ǎ

ýǂƬƕ ǂöǆǓƶ!ƒ ǂ5ƓƛǂƓ!ƒ ƖƥƓöƨ Ǒ5 ǂöƦƺƙ!ƒ ƧƛǄ Ƙ!ǍƓǉ ăƧƤǄǍ Ǜ(2000 ǛǇǍƧƤƈǍ ǇƥǉƒƧƕ) ǂƪƒƧƥǂ

ǂǁƕƓƪù!ƒ ƘƓùƪƒƧƥ!ƒ Ǉƶ ǂö!Ɠơ!ƒ ǂƪƒƧƥ!ƒ Ƙ5ǁƙƤƒǍ (2011 ǛǇǍƧƤƈǍ ǇǍƪǉǂƙƒ) ǂƪƒƧƥǂ ƥƧ5ǉǆ

.ǂöǆǓƶ!ƒ ǂ5ƓƛǂƓ!ƒ ƖƥƓöƨ Ǒ5 Ɩƥöƞ ǂöƦƺƙƕ ƔǍơ Ʈǆ!ƒ Ǒǉƥƕ!ƒ ƱƓƬǉ!ƒ ǂƪƧƓǆǆ ƧƛǄ Ƙ!ǍƓǉ Ɠǌǉǆƕ

(2012 ÜLJĂƧùƤcĂ ƒĂŏɳĜdž)Ă (2002 ÜŎdžĜʅĂ ýưĜ5) Ɨʅƒƨþ ƴdž Ɨʅƒƨþ!ƒ ǉŖǋ ƝƑĜkǉ ƘǀƼkǫĂ

LJþùǉƒƧlv) Ɨùʅƒƨþ Õù5 ýùƮĂk!ƒ Džùk Ĝdž ƴdž Ɨʅƒƨþ!ƒ ǉŖǋ ƝƑĜkǉ ƘƽǁkƤƒĂ Ü(2010 ÜĜǉöƨŏD) Ă

.(2000 ÜLJĂƧƤcĂ

اجراءات الدراسة

منهج الدراسة مجتمع الدراسة عينة الدراسة

الأدوات المستخدمة في الدراسة أداة الدراسة

صدق أداة الدراسة إجراءات تطبيق الدراسة

متغيرات الدراسة الأساليب الإحصائية

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] (10) [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

(3) !ƽþ üŊǰƣШ

ƿƨ ƐþƣǁƐ Ɩ Ɛþǐǅǂǅ Ǐ ƺ ƿǆǐƴǁƐ Ƨ ǆƑШ ǂ þƑǓƇƣǓ ƅƐŊǂǁǕƐ üǅƑƴǅŊ ƿǐþƑǐƴǅǁƐ Ɩ ƑƺƐþƟǆǕƐŊ ƿǐǓƑƨƟǁƐ Ɩ ƑƯƨŊǂǅǁƐ

(Ƨ ǅǐǁƐ ǅ ƨ ÛƘǅƯǁƐ ƱƑƯƾǆ ǅ ƨ ÛüǅƟǁƐ Ɩ Ɛþǅ ƣƣƳ ÛƱƑƮþǕƐ ƔƣǅÛþǅƴǁƐ ÛǅƦŊǁƐ ÛüŊƯǁƐ)

ƅƐŊǂǁǕƐ üǅƑƴǅ	ǎþƑǐƴǅǁƐ ƹ ƐþƟǆǕƐ	Ǐ ǓƑƨƟǁƐ Ư ƨŊǂǅǁƐ	Ɩ Ɛþǐǅǂǅǁ
0.09	5.1	ǅ Ɩ 159.5	üŊƯǁƐ
0.52	6.2	ǅƺǂ 60.7	ǅƦŊǁƐ
1.01 -	5.8	Ŋǁ Ɩ 61.8	þǅƴǁƐ
0.18	1.8	4.1	üǅƟǁƐ Ɩ Ɛþǅ ƣƣƳ
0.09 -	4.6	ƧŋT15.5	ƱƑƮþǕƐ ƔƣǅÛ
0.64	1.9	44.2	ƘǅƯǁƐ ƱƑƯƾǆ ǅ ƨ

:ƿƨ ƐþƣǁƐ Ǐ ƺ ƿǅǅƣǓǂƨǅǁƐ Ɩ ƐŊƣǕƐ

1. ǂǓƇ Ʀǐ ǂƵǆ ǂ Ɩ ǂƟƨ ƟǐƟƗ! ƘǑþǍǆ ǂƵǓ Ɩ.

2. ǂ Ɩ ƑƧþ! ǂǁǑƵ þƑƧƽǕ ýǍƱ!ƑǍ ǇƨǍ!Ƒ Σ ǓǑ! ǑƱ Ǉƨǐǆ.

3. ƨǑŋƞ Σ ǓǑ! ǂƻǓǂ! ǂǑǅƯƺ!Ƒ Σ ǓǑǅ ǂǑǅƯƑ Ɩƨ ƈǓƮ ƑƗǅƨǍǎШ ƑƱǓǑ! ǂùƐǆ ǂƹùTǕǓǆ ǂǑǁǑƖù!Ƒ

.DEXA

4. ǂ!ǓƮ ǂƐǓǑ! ǂǑǁþǆ ƾǑƱǆ! ƝǅǓǁƧǆ!Ƒ ǑǆǑƧþǆ!Ƒ.

.ǑƑƦƺ!ƑǍ ǑǁǑŊƣǆ!Ƒ ǑǆǑƧþǆ!Ƒ ƝǅǓǁƧǆ!Ƒ :ƿƨ ƐþƣǁƐ ƔƐƣǅ

ƽƣT ƔƐƣǅ ƐþƣǁƐ ƨƿ: ƱǑǂ ǑǓƘǅ ǂƱǓǆ!Ƒ ǂƻƧ Ư ƝǅǓǁƧǆ!Ƒ ǑǆǑƧþǆ!Ƒ ǑǁǑŊƣǆ!Ƒ ǑƑƦƺ!ƑǍ Ǐ ǁƵ ùþþ

.ǂ Ɩ ƑƧþ! Ɩ Ƒþ ƾ þ Ʈ Ǉǅ þǂǆǁ! ǇǑƮǆƤǅ!Ƒ ǇǑǅǂƱǅ!Ƒ Ǉǅ

(4)

DEXA

(13)

[illegible]

- [illegible] ((2) [illegible]) [illegible]

- [illegible] (DXA) [illegible]

- [illegible] (16) [illegible]

- [illegible] (3) [illegible]

- [illegible]

ƕƨƐƥƳǁƐ ƓƐƿǏƸƗǋǅ

:ƕǂƽƗƨǋǅǁƐ ƓƐƿǏƸƗǋǅǁƐ .1

- ƒƙƥǍƸǕƒ ƑƕƔƨƤǕƒ ƏǃƢǊƨƕǕƒ.

- ƒƙƥǍƸǕƒ ƏǃƢǊƨƕǕƒ.

:ƕƴǆƚƗǁƐ ƓƐƿǏƸƗǋǅǁƐ .2

- ƗƶǆƸ ƒǕƳǄǋƢ.

- ƢƕƺǕƒ ƑƵ ǋƙƐƤǕƗǅǕƒ ƗƔƺǕƒ.

!ƥƳƗƨǋǅǁƐ ƔƚƬƟƗǁ

ƜƸƨƤǕƺǔ ƗƹƾǌǕƒ ƘǄǓƴ ƗƐƾ

- ƑƕǌƺǕƒ ƱǌǀǕƒ

- ǏƨǌǗǄǕƒ ƺǕƨƾǔƥǕƒ

- ƒǌƢƘƺƗǁǕƒ ƑǕƬƥƗǁǕƒ ǅƶƿƾƹǕƒ test (K) ƪǘƵƾ ƢǕƘǄƑƹǕƒ ƏƶǘǀƗǕƒ ƗƹǃǄǋǓǕƒ ƗƹǁƗ

.ƗƢƨƤǕƺ

نتائج الدراسة

عرض النتائج وتحليلها

مناقشة النتائج

الإستنتاجات

التوصيات

[illegible]

[illegible] T-test [illegible]

(4) üNjqUl

ăqyĜllĒNj Ĭ‡ĜsllĒ DžĭþƑĜƗŒǀŰĒ DžĭĜ (T-test) ƕllŰqNj ƕDžĭɜNj ƕĭþƑĭyDžllĒ lƑʓɛþƟƌŰĒNj ƕĭĜƑƨƟllĒ lƑƯƨNjƗDžllĒ ηƮNjĭ
!ƑưyllĒ ƕƪƑƪlj ƒ þDžĜ lƑĜƑƬDžllĒ ƅƑƨƌllĒ njqll ƕĭDžưyllĒ ƕʓƑklǂll

ƕllŰqllĒ ƕĭƏƑƬƟŰĒ	lƑШþq ƕĭþƟllĒ	ƕDžĭɜ T-test	Ƹ ɛþƟƌŰĒ ăþƑĭyDžllĒ	ĬĜƑƨƟllĒ Ưƨ NjllĒ	qqyllĒ	lɛþĭƸƗDžllĒ
.000	9	-9.487	.359	²Džƪ /Ʒ -3.10	10	ƧĜƕkƤű! ƗőDžƱƶ!ƒ Ɨ5ĜΆǂ!ƒ Ŏllƕl!ƒ
			.337	²Džƪ /Ʒ -2.90	10	ƧĜƕkƤű! ƗőDžƱƶ!ƒ Ɨ5ĜΆǂ!ƒ ĭþƶƕ!ƒ

Ŏù5 Ƹùllƕ þùp ƗùőDžƱƶ!ƒ Ɨ5ĜΆǂ!ƒ ƧőʓkDž! ŎƕĜƪơ!ƒ ƱƪĂ!ƒ LJD ƠưƙŐ (4) DžpƧ ýĂþη!ƒ LJDž

ƗDžőp Ƙʓllƕ þl5 ĭþƶƕ!ƒ ƧĜƕkƤŰƒ Ŏ5 ĜDžD Ü(0.359) ĭƧĜőƶDž ƻƒƧơljƕĂ (-3.10) Ŏllƕl!ƒ ƧĜƕkƤŰƒ

ƗùDžőp Ƙùʓllƕ LJőơ Ŏ5 (0.359) NJkDžőp Ƙʓllƕ þp ĭƧĜőƶDž ƻƒƧơljƕĂ (-2.90) ŎƕĜƪơ!ƒ ƱƪĂ!ƒ

Ü(9) ƗùőƧơ ƗùηƧþƕĂ (0.05 ĭĂĜƪùƙ ĂD Ƨƕǂ‡D α) Ɨ!Ŭþ!ƒ ăĂƙƪDž þljƵ (9.487) T-test

Ƨƕǂ‡D α) þljƵ ƗőƑĜƮơƍ Ɨ!Ŭþ ƘƒƦ ƽĂƧ5 þĂηĂ ĬllƵ ýþő ĜDžDž Ü(0.000) Ƙʓllƕ ƗőƑĜƮơƍ Ɨ!ŬþƕĂ

ƧĜùƕkƤŰƒ Ơ!ĜƮù! ƽĂƧɜ!ƒ ljŖNj ƘĆĜη ƗőơĭþƶƕƒĂ Ŏllƕl!ƒ LJőƧĜƕkƤŰƒ LJőƕ (0.05 ĭĂĜƪƙ ĂD

.ƗőưƧɜ!ƒ ljŖNj ýĂƕp Ĭ!ƒ ƧőƬƙ ƗηőƙLJ!ƒ ljŖNjĂ Üĭþƶƕ!ƒ

- :ƕŭǜƑƙǁǋ ƕŭƮƥƾǁǋ

ǀƥǄùǒƨ Ĭù ǁƵ ǑƒƒƦƺ!ƒĂ ǑǁǁǒǊǆƙ!ƒ ǑƕǒƧƥƙ!ƒ ǋǆǍǄǀƧƕ!ƒ ƧƛǕ ƚǒƑǄƮơǫ Ƚ!Ǖƥ ƘƒƦ ƾĂƧƼ ƥƞĂƙ

.ǅǄƯƺ!ƒ ƚƬǄƬǊ Ư ƧǆƕƘǄƕǄƮǆƺ!ƒ ǄǄƮǀ!ƒ ăƥ! ǅƥ!ƒ ǑƼ ǅĂǒƮ!Ǆƚ!ƒ ƚƕƮǀ

ƘǄù ƼƒƧơǀǗƒĂ ƚǒƕǄƮùơ!ƒ ƘǄƱùƮĂƙǆ!ƒ ǟƒƧƤƙùƮǫ ǅƙ ƥǀƼ ƚǒǀǄƛ!ƒ ƚǒƯ ƧƼ!Ǆƕ ƾǁƺƙǒ ǄǆǒƼĂ

ǋǆǍǄǀƧƕ!ƒ ƾǒƕƱƙ ƥƺƕĂ ýƕƥ ǅǄƯƺ!ƒ ƚƬǄƬǊ Ư ƧǆƕƘǄƕǄƮǆƺ!ƒ ǄǄƮǀ!ƒ ăƥ! ƚǒǆƯƺ!ƒ ƚƼǄƛƚǁ! ƚǒƧǄǒƺǆƺ!ƒ

ƚƕƮùǀ ǑùƼ ƚǒƑǄƮơǗƒ ƾĂƧƼ!ƒ ǇǄǒ! T-test ƧǄƕƙƤǫ ǅƒƥƤƙƮǫ ǅƙ ǄǆƚǑƒƒƦƺ!ƒĂ ǑǁǁǒǊǆƙ!ƒ ǑƕǒƧƥƙ!ƒ

.ǁ !Ʀ Ơư Ăǒ ǀǄǀƥǅ ýĂƥƞ!ƒĂ ǛǋǆǍǄǀƧƕ!ƒ ƾǒƕƱƙ ƥƺƕĂ ýƕƥ ǅƥ!ƒ ǑƼ ǅĂǒƮ!Ǆƚ!ƒ

(5) ǜǊǆǁǜ

ăǆƴǄǁǋǊ Ĭƚǆǁǋ ǅǆƥƑƚǆǜǋ ǅƭǄ (T-test)ƕǁǛǆǊ ƕǅƭƼǊ ƕŭƥƒŭƴǅǁǋ ǀƒƺƥƟǆǛǋǊ ƕŭǄƒƨƟǁǋ ǀƒƯƨǊƚǅǁǋ ƞƮǊǆ

!ƒưƴǁǋ ƕƮƑƮǀ ƒ ƥǅǄ ǀƑƒƬǅǁǋ ƀƒƨǆǁǋ ǋǆǁ !ǆǁǋ Ĭƺ !ǊǆƨǁƑǁǋ ƕǄƨǆǄ ƼƚƴƚǅǁǋƧ

ƕǁǛǆǁǋ ƕŭƏƑƬƟǕǋ	ǀƑǟƥǆ ƕŭƥƟǁǋ	ƕǅǆƼ T-test	ƹǋƥƟǆǛǋ ăƥƑŭƴǅǁǋ	ĬǄƑƨƟǁǋ Ưƨǆǁǋ	ǆǆƴǁǋ	ǀǋƥŭƹƚǅǁǋ
.000	9	-8.062	0.491	4.91 (mg/100L)	10	ǑǁƕǁǀƧǄƕƙƤǗ! ǅƥ!ƒ ǑƼ ǅĂǒƮ!Ǆƚ!ƒ ƚƕƮǀ
			0.603	6.21 (mg/100L)	10	ĭƥƺƕ!ƒ ƧǄƕƙƤǗ! ǅƥ!ƒ ǑƼ ǅĂǒƮ!Ǆƚ!ƒ ƚƕƮǀ

ǑùƼ ƹùǁƕ ƥùƥ ǅƥ!ƒ ǑƼ ǅĂǒƮ!Ǆƚ!ƒ ƚƕƮǀ! ǑƕǄƮơ!ƒ ƱƮĂ!ƒ ǇǅƠưƙǒ (5) ǅƥƧ ýĂƥƞ!ƒ ǇǆƺƤ

ƚùǆǒƥ ƘƺǁƕƥǀƼ ĭƥƺƕ!ƒ ƧǄƕƙƤǗƒ ǑƼ ǄǆǅǛ(0.491) ĭƧǄǒƺǆ ƨƒƧơǀƞƕĂ (4.91) ǑǁƕǁƧǄƕƙƤǗƒ

ƚùǆǒƥ ƘùƺǁƕǇǒùơ ǑƼ (0.603) ǊǆǆǒƥƘƺǁƕƥƥ ĭƧǄǒƺǆ ƨƒƧơǀƞƕĂ (6.21) ǑƕǄƮơ!ƒ ƱƮĂ!ƒ

Ǜ(9) ƚùǒƧơ ƚùƞƧƥƕĂ (0.05 ĭĂǄƮùƙ ĂǅƧƕƚǅ α) Ƚ!Ǖƥ!ƒ ăĂƙƮǆ ƥǀƺ (8.062) T-test

ƧƕƚǅαƧ) ƥǀƺ ƚǒƑǄƮơǫ Ƚ!Ǖƥ ƘƒƦ ƾĂƧƼ ƥĂƞĂ Ĭǁƺ ýƥǒ ǄǆǆǛ(0.000) Ƙƺǁƕ ƚǒƑǄƮơǫ Ƚ!ǕƥƕĂ

ƧǄùƕƙƤǗƒ Ơ!ǄƮù! ƾĂƧƼ!ƒ ǀƦǊ ƘǄǄƞ ƚǒơ ĭƥƺƕ!ƒĂ Ǒǁƕǁ!ƒ ǇǒƧǄƕƙƤǗƒ Ǉǒƕ (0.05 ĭĂǄƙ Ăǅ

.ƚǒƯƧƼ!ƒ ǀƦǊ ýĂƕƥ Ĭ!ƒ ƧǒƬƙ ƚƞǒƙǀ!ƒ ǀƦǊĂ Ǜĭƥƺƕ!ƒ

:ƛəƑƚǆǁǀ ƕƪ ƪ ƷƑǆƉǅ

ΣƓùǒl!ƒĂ ǑƖƕl!ƒ ΣƓǒl!ƒ ǇƋǆ ý‡ Ǒ5 ƚǒǆƲƨ!ƒ ƚ5ƓƛŦ!ƒ ƧǒƺǩǆǇ! ƚǒƕƓƪơ!ƒ ƱƓƪĂǕƒ ƚǇƧƓlǆǆ þǇƵ

ƘƓƪƓǒl!ƒ Ơ!ƓƬ! ǑƕƓƪơ!ƒ ƱƪĂ!ƒ Ǒ5 Ƨǒƺǩ ǁƓǇǋ ǇǇ Ʊơǖǉ Ü(4) ǅǒƧ ýĂþƞ!ƒ Ơưǟǒ ƓǆǇ ĭþƶƕ!ƒ

ƽǒƕƱǩ þƶƕ ƚǒǆƲƨ!ƒ ƚ5ƓƛŦ!ƒ ƘƓƪƓǒƿ ǇǇ ƻǖǨƤǗƒ ƒƦǋ ƓǇ! ǑǇƶǒĂ ÜǗǒƕƓƞǒƒ ǇƓ‡ Ƨǒƺǩ!ƒ ƒƦǋĂ ÜƚǒþƶƕƖ!ƒ

ƘƓùƪƓǒl! Ǒùƕl!ƒ ǑƕƓƪơ!ƒ ƱƪĂ!ƒ ǇƓ‡ ƚǒơ Üýư5ǅ ƘǇƓ‡ ǑƑƒƦƺ!ƒĂ ǑƖǒǋǆǩ!ƒƒ ǑƕǒƧþǩ!ƒ ǊǆƓǇƧƕ!ƒ

Σ5ǇùǃƓ! ĭþùƶƕ!ƒ ΣƓùǒlƖ! (-2.90) ƠƕƬǅĂ (-3.10) (ƚƪƒƧþ!ƒ ƚǇǒƵ þƒƧ5Ǖ) ƚǒǆƲƨ!ƒ ƚ5ƓƛŦ!ƒ

ƚùǇǒƵ þƒƧù5ǅ ăþù! ĭþƶƕ!ƒ ΣƓǒl!ƒ Ơ!ƓƬ! ǅǆƲƨ!ƒ ƚ5ƓƛŦ Ǒ5 ǇƪơǨ þĂƞĂ ǏƖƵ ýþǒ ƓǆǆǆǆǇ ÜƧǒƺǩǆǇ!ƒ

ƽùlơǒ ƒƦùǋĂ ƓǒƑƓƬùơǫ ƚ!ƒþ ƘƓƪƓǒl!ƒ Ǒ5 ƽĂƧ5!ƒ ǇƦǋ ǇǇ (4) ýĂþƞ!ƒ ƠưǟǒĂ ƓǆŦ ÜƚƪƒƧþ!ƒ

þùǇǒƵ ƘùǨǋƛĂ ƚƪƒƧþ!ƒ ƚǇǒƵ þƒƧ5ǅ Ʊƶƕ þǇƵ ƘƓƪƓǒl!ƒ ƘǇƪơǨ ƚǒơ ÜƚƪƒƧþƖ! Ǐ!ĂǕƒ ƚǒưƧ5!ƒ

ƚùǒǆƲƨ!ƒ ƚ5ƓƛŦ!ƒ Ǒ5 ǑƕƓƞǒǫ ƧĂƱǩ ƚĂþơ ǏƖƵ ýþǒ ƘƓƕƛ!ƒĂ ǇƪơǨ!ƒ ǇƋǆ ǕŦ ǇǫĂ ÜƧƤǕƒ Ʊƶƕ!ƒ

ǇƒþùƖ5 ƻƿĂ ǏƖƵ ýǆƵ ǑƑƒƦƺ!ƒĂ ǑƖǒǋǆǩ!ƒ ǑƕǒƧþǩ!ƒ ǊǆƓǇƧƕ!ƒ Ǉǫ ƚǒơ ÜƘƓ‡ƧƓƬǆ!ƒ ƘƒþǒƪǇ!ƒ ăþ!

ǏùƖƵ ýþǒ ƓǆǆǆǆÜǇǌǇǆǆ ǑƿƓƕ!ƒ þǇƵ ƓǌǩþƓǒƨ ǏƖƵĂ ƘƓ‡ƧƓƬǆ!ƒ ƘƒþǒƪǇ!ƒ Ʊƶƕ ăþ! ƚǒǆƲƨ!ƒ ƚ5ƓƛŦ!ƒ

ƘƒþǒƪǇ!ƒ ăþ! ǅǆƵ ý‡Ƭƕ ƚǒǆƲƨ!ƒ ƚ5ƓƛŦ!ƒ ăĂǨƪǆ ǇƪơǨ þƿ ǑƑƒƦƺ!ƒĂ ǑƖǒǋǆǩ!ƒ ǑƕǒƧþǩ!ƒ ǊǆƓǇƧƕ!ƒ ǇǇ

.ƘƓ‡ƧƓƬǆ!ƒ

ǊǆƓùǇƧƕ!ƒ ƽùǒƕƱǩ ǏùƖ!ƹ ƚǒǆƲƨ!ƒ ƚ5ƓƛŦ!ƒ ăĂǨƪǆ Ǒ5 ǇƪơǨ!ƒ ƒƦǋ ƔƓƕƪǅ ƚƛơƓƕ!ƒ ĂƨƶǨĂ

ǇǇ ƚùǒơ Ǉǆǆ ƚƪƒƧþ!ƒ Ǒ5 ƘƓ‡ƧƓƬǆƖ! ƚǒǆĂǒ!ƒ lƓǒơ!ƒ ƱǆǇ ƻǖǨƤƹĂ ÜǑƑƒƦƺ!ƒĂ ǑƖǒǋǆǩ!ƒ ǑƕǒƧþǩ!ƒ

ǏùƖ!ƹ ýĂƬĂƖ! ǑƬǆ!Ɠƕ lƧƓǒƪ!ƒ ƔĂ‡Ƨ ýþǒƕǨƪƹĂ ÜǇþƓǆ!ƒĂ ƘƓǇǒǆƓǆ5!Ɠƕ ǑǇƺ ǑơƬ ƓƑƦƺ ýĂƓǇǨ

ǇƪùơǨ ǏùƖƵ ýǆƶǨ Ǒǩ!ƒ ƚǒưƓƧ!ƒ ƘƓǇǒƧǆǩ!ƒ ƚƪƧƓǆǆǆ ýǆ ǇƧþ!ƒ þĂƶƬĂ ƧƓǋƨƤǗƒ ƽǒƕƱǩ ǇƓ‡ǆ

[illegible]

.(Giangregorio & Blimkie, 2002) [illegible]

[illegible] (2002 [illegible]) [illegible] (2004 [illegible]) [illegible] (2005 [illegible] (Walker, 2000) [illegible] (Kimberly et all, 2000) [illegible] (Ieczenia, 2010) [illegible] (Maggio et all, 2012) [illegible] Brendan et) [illegible] (all, 2000 [illegible]

[illegible]

[illegible] (5) [illegible] (6.21) [illegible] (4.91) [illegible]

[illegible] (5) [illegible]

.[illegible]

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[illegible] (D) [illegible]

[illegible]

[illegible] (Heaney, 2000) [illegible]

[illegible] (Atkinson et all, 2011) [illegible] (1991 [illegible])

.(Ieczenia, 2010)

[illegible]

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- [illegible] (10) [illegible]
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1. [illegible]

2. [illegible]

3. [illegible] (D) [illegible]

4. [illegible]

[illegible]

[illegible]:

1. [illegible] 35-25 [illegible]

[illegible].

2. [illegible] (D) [illegible].

3. [illegible] ([illegible]) [illegible].

4. [illegible] ([illegible]) [illegible].

5. [illegible].

6. [illegible] : [illegible].

7. [illegible].

8. [illegible] (fast food) [illegible].

9. [illegible] (z-score) [illegible].

قائمة المصادر والمراجع

[illegible]:

- [illegible] (1986). [illegible]
- [illegible] (2011) [illegible]
- [illegible] (2007).
- [illegible] (2002).
- [illegible] (2002). [illegible] .DC
- [illegible] (2000). [illegible]
- [illegible] (2008) [illegible]
- [illegible] (2005). [illegible]
- [illegible] (2010). [illegible] :DC [illegible]
- [illegible] (2005). [illegible]

- [illegible] .(2004) [illegible]

- [illegible] .(2002) [illegible]

- [illegible] .(1998) [illegible]

- [illegible] (2004) [illegible]

- [illegible] .(2005) [illegible] .(462 [illegible]) - [illegible]

- [illegible] .(2004) [illegible] .333-326 [illegible]

- [illegible] .(2002) [illegible]

- [illegible] .(2001) [illegible]

- [illegible] (NIH) [illegible] (2000) [illegible]

- [illegible] (2006) [illegible] :www.nih.gov\nia

- Ǘ ȡƑøưƳ ǋøƟǆ ǀƐǋøƯƣ Ƙűƙ "ǅƐǋǆƴƓ .(2011) ǕǅƱƺ!ƒ ƫƿƨƙ! Ɨő!Ăƥ!ƒ Ɨƪƪƌǆ!ƒ ƧĂƬǉǆ -

:ǑùǉĂƧƙǂ!Ǖƒ ƴƿĂǆ!ƒ ǏǁƵ ƧƅĂƙǆ"ı ƕƾƮƑǐƥǁƐ ǅǐƥƑǅǂǁƐǋ !ǋǐƨǁƑǀǁƐǋ "ƣ "ǅǐǅƑǂǐƺ ı ƥƨǀǆǂ

www.iofbonehealth.org

- ." ƗơƮ!ƒ ýƞǅ ǇǆǅƒĂǂƧơƙ " ǇƒĂǉƺƕ ýƓǀǆ Ǖ(2003) (woh) ǂőǆ!Ɠƺ!ƒ ƗơƮ!ƒ ǂǆƱǉǆ -

- .(2010) ǕǅĂǀƺǀ! ǂőǉƱĂ!ƒ ǂőǆőƥƓǂǕƒĂ ǕƩǀƞǆ!ƒ ƔƱ!ƒ ƥǌƺǆ ǕǂőƦƷƙ!ƒĂ ǄƦƷ!ƒ ǂǆƱǉǆ -

- ƕøǂǀǅǁƐ ǕǂùǉǆƨǆƋ Ưƒƨùǆǖƒ Ǉǆ ǂƓƿĂ!ƒĂ ǑǉƥƕƋ ƱƓƬǉ!ƒ .ǅ (2004) ƥǆơǆ Ƴƒƨǋ ǕƳƒƨǌ!ƒ -

.161 - 141 Ǖ5 ƫơǀǆ ǕƕǐƤƸǂǁƐǋ ƀƐƤƸǂǁ ƕǐƓƥƴǁƐ

- ǇĂǂƙ ýƕƿ ǅƓƱƺ!ƒ ǇĂǂƙ Ǒǅ ǑǆǀƺƋ ƨƓƞƵǗƒǕ ǅőƧǂ!ƒ ǇƈƧǀ!ƒ ǀƨƞƺǆ .(2001) ǕǇĂƧƓǋ ǕǏőơő -

http://forum.sedty.com/t119206.html.14 Ǖ13 :ǇĂǉǆƌǆ!ƒ ǀƧĂƪ ǕƘǔ ưƺ!ƒ

-Atkinson, S.; Ward, W.; Hoffer, J.; Jones, P. (2011). The Role of Nutrition in the Prevention and Treatment of Adult Osteoporsis. Canadia Medical Association Journal, 165(11), P. 1511.

- Brendan Humphries, Robert U. Newton, Roger Bronkes, Sonja Marshall, Jeff McBride, Travis Triplett – McBride, Kejo Hakkinen, William J. Kraemer ,and Nerelle Humphries. .(2000). **Efect of exercise intensity, strength, and calcium turnover in older women**. **Medicine & Science in Sport & Exercise**. JuneVol.325, No.18. Pp 6-32.

- Conradie M, du Plessis M, Conradie R, Hough FS. Ethnic differences in bone density and vertebral. fracture prevalence between black and white South African females. JEMDSA 2005;10(1):40.

- Cole RE (June 2008). "Improving clinical decisions for women at risk of osteoporosis: dual-femur bone mineral density testing". J Am Osteopath Assoc 108 (6): 289–95.
- Cummings SR, Melton LJ 3rd. Epidemiology and outcomes of osteoporotic fractures. Lancet. 2002 May 18;359(9319):1761-7.

- Cummings SR, Melton D.Bone Mass Meaurements and Risk of fracture in Caucasian Woman: A Review of Findings from Prospective Studies. The American Journal of Medicine.(1995).

- Cuyton CA and Hall JH: Tratado de fisiologia medica,MC Graw – Hill,10,Mexico , (2004).

- Delmas P.D.1997.Osteoporosis today: Overview and assessment of Risk Factors. **British Journal of Rheumatology.**

-Dreux, C., Delmas, PD – Les 60ethods de mesure de la densité minérale osseuse (DMO) et des marqueurs du remodelage osseux dans le dépistage de l'ostéoporose. Bull. Acad. Nale Méd., 2001, 185(8) , 1561-1580.

-Dietary Reference Intakes (DRI), Institute of Medicine, Food and Nutrition Board, based on Adequate Intakes (AI) National Academy of Sciences, National Academy Press:Washington, DC 2010. http://www.niams.nih.gov/health_info/bone/bone_health/nutrition/

- Flower: 28 , (2006). Article in Osteoporosis.P 45 – 50 .

- Food and Nutrition Board, Institute of Medicine (2004). Dietary Reference Intakes for Vitamins. Washington, DC: National Academies Press. Also available online: http://www.iom.edu/Object.File/Master/7/296/webtablevitamins.pdf.

- Fogelman.lgance,Blake. Glen, **Defferent Approaches to Bone Densitometry,** ***the American Journal of Nuclear Medicine***, 2000,No 104, No 12 2015-2025.

- Gronholz MJ.(2009) Prevention, diagnosis, and manage- ment of osteoporosis-related fracture: a multifac-toral osteopathic approach. J Am Osteopath Assoc ; 109:191-3.

-Gregg EW et al. Physical activity, falls, and frac_ tures among older adults: a review of the epidemio logic evidence. Am. Geriatr. Soc. 2000. 48:883-893.

-Giangregorio, L., and C. J. Blimkie. Skeletal adaptations to alterations in weight-bearing activity: a comparison of models of disuse osteoporosis. *Sports Med.* 32:459–476, 2002.

-Harrison's – Rheumatology – Anthony Fauci, et al, 2006.

- Heaney RP. Calcium, dairy products and osteoporosis. J. Am. Coll. Nutr. 2000. 19: 83S-99S.
- Heaney, RP (2002). "Effects of Caffeine on Bone and the Calcium Economy." *Food and Chemical Toxicology* 40:1263–1270.
- Heidari, B. Hoshmand, S. Hajian. K and Heidari. P. (2010) Comparing bone mineral density in postmenopausal women with and without vertebral fracture and its value in recognizing high-risk individuals, EMHJ, 16 (8), 868-873.
- Holick, M. F,. Sunlight "D"ilemma: risk of skin cancer or bone disease and muscle weakness. Lancet 2001; **357.**
- Holick MF.Vitamin D deficiency. New England Journal of Medicine 2007;357:266.281.
- Hyiaman. D. O, Satoshi. T, Ueji. M , Hideto. T, and Kano. K. 1998: Timing of Menopause, Reporoductive years, and Bone Mineral density, A Cross-Sectional Study of Postmenopausal Japanese Women. **American Journal of epidemiology.**
- Ieczenia, T.; (2010). Innovative, Comprehensive, Active Rehabilitation of Osteoporosis with New Strategy of Treatement. Arthroscopy and Joint Surgery, 6(314), 29- 35.
- Ilich JZ, Kerstetter JE . Nutrition in bone health revisited: a story beyond calcium . J AM Coll .Nutr 2000; 19(6) :715-737.
- Jacobzone, S., Jee-Hughes M, Moise P. Hip fractures and osteoporosis. In: OECD Ageing: related disease study. Technical report. Medical and epidemiological background. May 1999. 22-27.
- Jones G. Pharmacokinetics of vitamin D toxicity. Am J Clin Nutr 2008; 88: 582S-6S.

-Kanis JA. Diagnosis of osteoporosis and assessment of fracture risk. Lancet 2002; 359:1929-1936.

-Kanis JA, Burlet N, C Cooper, et al. (2008) European guidelines for the diagnosis and treatment of osteoporosis in women after menopause. Osteoporos researcher 19:399.

-Knochel JP. Phosphorus. In Modern Nutrition in Health and Disease, 9th ed. Shils ME et al., eds Williams & Wilkins. Pp. 157-158.1999.

- **Kimberly. (**2000). Examine the impact of resistance exercises on the power dynamic and AloizukintekipThe muscles and balance in women with bone fragility.

-Kemmler, Wolfgang. Vonstengel, Simon. Weneck, Jurgen. Lauber, Dirk. Kalender, Willi. Engelke, Klaus. Exercise Effects on Menopausal Risk Factors of Early Postmenopausal Women: 3-yr Erlangen Fitness Osteoporosis Prevention Study Results. Medicine & Science in Sports & Exercise: February 2005 - Volume 37 - Issue 2 - pp 194-203

- Kenny, AM, Prestwood, KM. Osteoporosis, Pathogenesis, Diagnosis, And Treatment In Older Adults. Rheum Dis Clin North America 2000 AUG; 26 (3):569-591.

- Maggio, Albane B.R. Rizzoli, Rene. Marchand, Laetitia M. Ferrari, Serge Beghetti, Maurice; Farpour-Lambert, Nathalie J. 2012. Physical Activity Increases Bone Mineral Density in Children with Type 1 Diabetes. The American College of Sports Medicine& Science in Sports & Exercise. doi: 10.1249/MSS.0b013e3182496a25.

- Manolagas.S.C & Jilka. R.L Bone Marrro, Cytokines, and Bone Remodeling. **The New England Journal of Medicine**. Feb. 2, 1995 Vol.332, No.5 pp305-11.

- Martin KJ, Akhtar I, Gonzalez EA. Parathyroid hormone. new assays, new receptors Semin Nephrol 2004;24:3-9.

- McAuliffe K, Whitehead H (2005). "Eusociality, menopause and information in matrilineal whales". Trends Ecol Evolution 20: 650 .

- Melton, LJ 3rd; Cooper, C. Magnitude and Impact of Osteoporosis and Fractures. In: Marcus, R; Feldman, D; Kelsey, J, editors. Osteoporosis, 2nd ed. Vol. 1. San Diego: Academic Press; 2001; pp. 557-67.

- Mone Zaidi, Baljit S. Moonga, and Etsuko Abe **Calcitonin and bone formation: a knockout full of surprises** The Journal of Clinical Investigation, December 2002, Volume 110 , Number 12**1767.**

- Osteoporosis prevention, diagnosis and treatment. NIH Consens Statement 27 to 29 March 2000; 17 (1): 1-36.

- Pettifor, JM, Nutritional rickets: deficiency of vitamin D, calcium, or both? American Journal of Clinical. Nutrition 2004; 80: S1,725-S1,729.

- Peel.N & Eastell.R. 1996. ABC Rheumatology: Osteoporosis. Pp36 – 39.

- Pilon D, Castilloux AM, LeLorier J. Estrogen replacement therapy: determinants of persistence with treatment. Obstet Gynecol 2001;97:97-100.

-Prince, R. L, Smith.M Dick. I. M, Prince. R. I, Webb.P.G Henderson. N. K, and Harriss. M. M.1991: Prevention of Ostmenopausal Osteoporosis, Acomparative study of Exercise , Calcium Supplementation, and Horomone –Replacement therapy.The New England Journal of Medicine.Vol.325,No.17.pp1189-95.

- Reid IR. (1997). Glucocorticoid Osteoporosis - mechanisms and management. J 137:209 euros Endocrinol.

- Sharami. S, Forozan. M, Ahmad. A, Zahra. R, Maryam S, Alireza. M (2008) Risk Factors of Osteoporosis in Women Over 50 years of Age:A Population Based Study in the North of Iran, J Turkish-German Gynecol Assoc,. 9(1), 44.

-Sinaki M, Canvin JC, Phillips BE, et al. Site specificity of regular health club exercise on mus cle strength, fitness, and bone density in women aged 29 to 45 years Mayo Clin Proc 2004. 79(5):639–44.

-Stone KL, Seeley DG, Lui LY, Cauley JA, Ensrud K, Browner WS, Nevitt MC, Cummings SR; Osteoporotic Fractures Research Group. BMD at multiple sites and risk of fracture of multiple types: Long-term results from the Study of Osteoporotic Fractures. J Bone Miner Res. 2003 Nov; 18(11):1947-54.

-Vieth R et al. The urgent need to recommend an intake of vitamin D that is effective. American Journal of Clinical Nutrition 2007;85;649-650.

-Walker. Michal Bruce (2000), **A cross-sectional study of the efficacy of supervised exercise program in the prevention and treatment of Osteoporosis**, university of Canada.

-Wolpowitz, D., & Gilchrest, BA (2006). The vitamin D questions: How much do you need and how should you get it Journal of the American Academy of Dermatology, 54(2), 301-317.

-Wilmor. Jack, Costill. David, Phsyology of Sport and Exercise, Second Edition, 1999, Human Kinetics.

قائمة الملاحق

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ملحق رقم (3)

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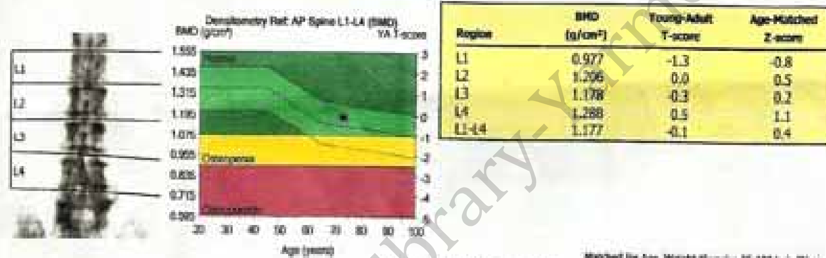
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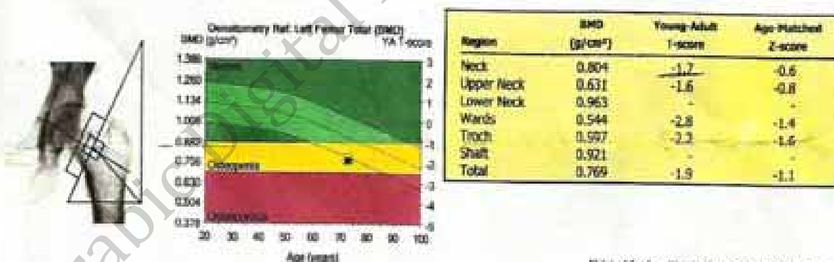
Patient:	NADMIEH, AHMAD MOHMMAD	**Patient ID:**	163756
Birth Date:	01-Dec-38 73.0 years		
Height / Weight:	165.0 cm 100.0 kg	**Measured:**	01-Dec-11 9:30:22 AM (13.20)
Sex / Ethnic:	Female White	**Analyzed:**	01-Dec-11 9:31:48 AM (13.20)



Region	BMD (g/cm²)	Young-Adult T-score	Age-Matched Z-score
L1	0.977	-1.3	-0.8
L2	1.206	0.0	0.5
L3	1.178	-0.3	0.2
L4	1.288	0.5	1.1
L1-L4	1.177	-0.1	0.4

Image not for diagnosis

Matched for Age, Weight (females 25-100 kg), Ethnic
USA (Combined NHANES (ages 20-30) / Lunar (ages 20-40)) AP Spine Reference Population (v112)
Statistically 68% of repeat scans fall within 1SD (± 0.010 g/cm² for AP Spine L1-L4)



Region	BMD (g/cm²)	Young-Adult T-score	Age-Matched Z-score
Neck	0.804	-1.7	-0.6
Upper Neck	0.631	-1.6	-0.8
Lower Neck	0.963	-	-
Wards	0.544	-2.8	-1.4
Troch	0.597	-2.2	-1.6
Shaft	0.921	-	-
Total	0.769	-1.9	-1.1

Image not for diagnosis

Matched for Age, Weight (females 25-100 kg), Ethnic
USA (Combined NHANES (ages 20-30) / Lunar (ages 20-40)) Femur Reference Population (v112)
Statistically 68% of repeat scans fall within 1SD (± 0.012 g/cm² for Left Femur Total)

Lumbar Spine :- Normal

Neck of femur :- Osteopenia

GE Healthcare

Lunar Prodigy Advance
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الرقم	العمر	القياس القبلي (T)	القياس البعدي (T)
1	56	3.6-	3.3-
2	57	3.1-	2.9-
3	55	2.9-	2.6-
4	45	3.3-	3.1-
5	60	3.7-	3.5-
6	55	2.7-	2.6-
7	46	2.9-	2.8-
8	42	3.2-	3.0-
9	49	2.6-	2.4-
10	54	3.0-	2.8-

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الرقم	العمر	القياس القبلي (ملغم /100ليتر) (mg/dl)	القياس البعدي (ملغم /100ليتر) (mg/dl)
1	56	4.5	5.9
2	57	4.8	6.3
3	55	5.2	6.8
4	45	4.3	5.5
5	60	4.1	6.1
6	55	5.0	6.5
7	46	4.9	5.0
8	42	5.4	6.4
9	49	5.6	6.7
10	54	5.3	6.9

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ƫǀƭ ƩǀƟǀƧǀƫǀ ƬƞƤǀƺƨ ƬƞƤƬƺ ƬƞƤǀƺƨ ƬƞƤƬƺ:

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ƠNjĠƨŮǃ Ĭ ʒ !Njĭ üƣƴDžĠNj ǍǁNjŮǃ ƕƴĠþŮǃ ƯĭĠƑƨŮǃ njƣDž ǍƗƳ ƔƣƟNjǁǃ ǅƤǉ þþ!Ɨ

!ƑƳ ü!ƪĠ üDžƟƗǁǃ ƕĭDžǆƗNj Ĭ ƨƺǆƗǁǃ ǎþNjƣǁǃ ƦƑNJǁǁǃ þĭNjƯƗ :ƔƣƟNjǁǃ Ʃƣǉ

ǀ ƒƯƟǘDž	ǀ ǃNjƣŮǃ	ƨ þƑDžDžǁǃ ƯƑƪǆǁǃ	DžDžƦǁǃ ƕƾĭƨƣǁƑĠ	ƀǃƦǁǁǆ ƔƣƟNjǁǃ
ƨĠƬǩǉƒ .ƨơ	ǀƨ5ĠƮ	1. ƠƬǆ ƪƨƃ ƴǆ ƴǆƨ ƗơƞƨǆƦ ǅŏƵƒƨƦ!ƒ ǆǆĠǆD ǅƨǁƤ. 2. ƪƞ!ƒ Ƙǚ ư Ƶ ƴǆǆƞ! Ɨ!ĠƱƺ.Džƪ	10	ĊǆǆơŰƒ
ƨĠƬǩǉƒ .ƨơ	ǀƨ5ĠƮ ƘĠƬƨ5 Ɣŏƨþǩ	1. ƠƬǆ!ƒ ƴŏƨƪ!ƒ Ăǩ!ƮŏƨƵ ǅŏ!ĠƵ þǉƵ ƪǆƴƔ!ƒ ƮĠƨ5ƨǀ !ǆþǀ 7 þƥƑƨ. 2. ǅƞ!ƒ ĭ ƨƴ5 ƴǆ ƨƦ!ƒƵŏǅ ǆǆĠǆD ƞǚ ǆƞǉĠǅ ƞǚ ǆŏ!ĠƵ !ǆùþǀ .þǅǀǩŏǅ 3. ƞƨ!ƒ ĭ Ƥ5ŏƵ ơǍý 5ƨƬĠƘ !ƒǩþƨŏƔ !ǆþǀ 3 þƥƑƨ. 4. ǆǆǅ Ăƛƞ!ƒ ƪǉþ ƒ!ƗǩŏǅǄ Ƶ ǆǆĬ ƒŮƨƯ ǩĠþý ǩǁĂƩ ƕ ƒ!ŬƨnjƨƘ ƪǆ!ŭĂƒ ǅƛƒĂƒƗĠƘ ƞǆþǀ 10 ǅĂƛƒǅ 5Ŏ ƗŏƵ .ĂưƳ	20	Ċƨƞ!ƒ Ŏƪŏ5ƑƨƤ!ƒ 4 Ã 1
ƨĠƬǩǉƒ .ƨơ		ƵǆƵ ƺĠƱ!Ɨ ƞǆǆƴ DƵư ĊĊ!ƒƞƪ Džƪ	5	Ċƨƞ!ƒ ŎǆǆĠǩƤ!ƒ

[illegible]

[illegible]

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	• [illegible] • [illegible]	10	[illegible]
[illegible]	[illegible]	• [illegible] • [illegible] • [illegible] • [illegible] • [illegible]	15	[illegible] (8 Ã 1)
[illegible]		• [illegible] • [illegible]		[illegible] (8 Ã 1)
[illegible]		• [illegible] • [illegible]		[illegible] (8 Ã 1)
[illegible]	[illegible]	• [illegible] 45 [illegible] • [illegible] 45 [illegible] • [illegible] 45 [illegible]		[illegible] (8 Ã 1)

ƧǴTƙǉƒ .Ƨơ	ǑƪƧǂ	• .ƱƪĂ!ƒ ƘǴǊƛ ƴǆ ƻĂpĂ!ƒ ƴưĂ ǇǆǇǒƙǉǂƧ!ƒ Ǒǉƛ • ǴùǆǴǆǲ ǇǒǉƞƧù!ƒ ƥƧù5 .Ǒùƪƨǂ ǏǉƵ ƩĂǉƞ!ƒ .ƔĂǴǉƙ!Ǵǉ ƚǆǴǉƙƪǴǉ • .ƔĂǴǉƙ!Ǵǉ ǍƤƒƥ ǯƞƧǴƤ ǇǒǆƥI!ƒ ƱǴTǆǲ ƥƧ5 .ƥĂpƧ		ƘǛưƵ ƚǒĂlƙ ǇǒǉƞƧ!ƒ (8 Ã 1)
ƧǴTƙǉƒ .Ƨơ	ƘǴTƧ5 .ƔǒƧƥƙ	• .ƻĂpĂ!ƒ ƴưĂ ǇǆǇǒƵƒƦ!ƒ ƨǋ • Ǒùǉƛ ƴǆ ƥĂpƧ!ƒ ƴưĂ ǇǆƧǌƱǉ! ǇǒƥƵǴƪ!ƒ ƥǴǉƪƒ .ǇǒǉƞƧ!ƒ ƨǋĂ ǇǒƙǉǂƧ!ƒ	5	ǑǆǴƙƤ!ƒ Ǵƨƞ!ƒ

ƥƪƳ ƿǀǁǂǃ ƿǄǅƥǆǃ ƳǇǈǉǃ

ƿǄǃǂǆǃ ƿǊǅƥǋǃ ǌǄǅǂƨǋǃ ǍǇǎ ǏǆƳ ƳǇǈǉǃ ǐǑǒ ƥƥǓǆ

(ǎǎǂǀǃ ǔǌǅǂƨǃ ǔ Ƨ ǇǂƨǃǃǕ ǔ Ƨ ǎǂǖǃǃ)

ƱǉǅƨƇ üǓ Ǐƺ ƳƥǎǏ üǇǊǎǅǉ

!ƑƳ üǓƪǅ !ƨǗǃ ƿǄǎǎǆǉ Ǐƨǘǆǃ ǙƥǉǇǃ ǚǂǛǗǃ ƥǄǉǜǆ :ƳǇǈǉǃ Ƹǝǐ

ǞƒƜƟǠǎ	ǞǡǉǇǢ	Ƨ ƥǂǎǎǃ ǣǂƪǃ	ǎǎǤǃ ƿǥǄǦǂǅ	ƀǨǗƇ ƳǇǈǉǃ
ƧǅƬǩƒ .ƨơ		• ƨƥǫ Ʋǐƨƥǚ ǬǄƵǂƨǚ! ǆơƞƧǎ ƴǎ ƻǭƤ ǏƧƞ. • ǮǯƞǏƒ ƘǰƯƵ ƴǎǎƞ! ǆ!ǅƱǂ.	10	ǱǎǲơǓǂ
ƧǅƬǩƒ .ƨơ	ǆƵǅƪ ƘǭǳǍǩ	• ƻǭƤ ǏƧƞ 7 ƥǎǊ! ƈǂǅƥƥ. • ǑǬƤ! ǑƬǎ!ƒ 3 ƥǎǊ! ƈǂǅƥƥ. • ƻǭƤ ǏƧƞ ǑƼ ǬǅǆǎƒƑ 5 ƥǎǊ! ƈǂǅƥƥ. • Ǝ!ǍƨǩǍ ǗƧƥ!ƒ ƥǍƶ Ʈ.	20	ǅƨƞ!ƒ ǑƪǭƒƧ!ƒ 3 ƘƒƧƒƧǆǩ
ƧǅƬǩƒ .ƨơ		ǎƪƞ!ƒ ǱƯƵƊ ƴǎǎƞ! ǆ!ǅƱƼ ƴǎƵ	5	ǅƨƞ!ƒ ǑǎǅǩƤ!ƒ

[illegible]

[illegible]

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	• [illegible]	10	[illegible]
[illegible]	[illegible]	• [illegible] (0.5) [illegible]	25	[illegible]
[illegible]		• [illegible] • [illegible] • [illegible]		[illegible] (8 Ã 2)
[illegible]	[illegible]	• [illegible] • [illegible] 90 [illegible] 10 [illegible] 45 [illegible] • [illegible]		[illegible] (8 Ã 1)
	[illegible]	• [illegible] 45 [illegible] • [illegible] • [illegible]		[illegible] (8 Ã 1)
[illegible]		• [illegible] • [illegible] • [illegible]		[illegible] (8 Ã 1)
	[illegible]	• [illegible] • [illegible]	10 -5	[illegible]

[illegible]

[illegible]

([illegible])

[illegible]

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	10	• [illegible]	[illegible]	[illegible]
[illegible]	30	• [illegible] • [illegible] (15) [illegible]	[illegible]	
[illegible]	5	[illegible]	[illegible]	[illegible]

DžNjþ ʅ yǁNj hʋ ƨ DžƑǬǁ hʉǦǏþǬǂǁ ƔǬƟNjǁ

hʉǁƑǂǁ hʋǦþǓǁ ǓǏǦƑ ƨ Ǔǁ njǬDž ǍǂƳ ƔǬƟNjǁ LJƤlj þþǀǂ

(þ ʅ Ƴ ǏǆƑǁǁ Ǜþ ʅ Ƴ ǎǬƑƟǁ Ǜþ ʅ Ƒyǁ ǛƲ ƨ ƑǂǁǏ)

ƱNjǦ ƨ ƈ ǜl Ǐʓ Ɣ þDž ǜǬyDžǦNj

! ƨ Ǚǁ l ǘ Ʈ Ƴ hʉNjƪǂ :ƔǬƟNjǁ ƹ ǬǇ

l ƑưƟǘDž	l ǁNjǬǓ	ƨ þƑDžDžǁ ƯƑ ʅ ǆǁ	DžDžǁ hʋǏƨǬǁƑǦ	ƔǬƟNjǁ ƀǁǁƈ
ƨǦƬǁǇ .ƨơ	ǂƵǦ ʅ ƘǒþǍǁ	• ǏƨƞƤ Ʀ ǒƨ (ǂ!ǍƨNj) !ǆþl 5 þþǦƑƪ • ƱǦ!ǂ	10	ƇǦǆơǓƒ
ƨǦƬǁǇ .ƨơ	LJƒ ƨ ǍǄ ǂƨǁǁƤǆ ƘǦƬƨ5 Ɣǒƨþǁ	• þǒ ƴǂ Ǒ5 ǆʓǂ (0.5) ƴǁǁ ƴǆơ ƴǆ Ʀ ǒƨ ƤǏƨƞ • ǆʓǂ (2) ƴǁǁ ƴǆơ ƴǆ ƴƨƨ ʅ ǑƬǆ • Ʃ ǂʑ!ǦǍ ƨǦ ʅ ǒ!ƒ ƳƒƨǁǏ ƴǆ LJǒǆǒ!ƒ ƴƞƨ!ƒ ƴƨƨ ƴþǦǁ .þǍƥƨ	25	Ǒ ʅ ǒƑƨ!ƒ Ƈƨƞ!ƒ ǂǆǦƵ ǂǒǍǁǁ (8 Ã 3)
ƨǦƬǁǇ .ƨơ	LJƒ ƨ ǍǄ	• ǇǦƞǁǆ ƪ5ƨǆ!ƒ ǑǁǇ ǛǏǇǆǒ!ƒ þǒ!ƒ Ǒ5 ǆʓǂ 1 ƴǁǁ ƴǆơ Ʀ ǍƥǍ ƨþ Ʈ !ƒ • ƪ ǜ5ƨǆ!ƒ Ǒǜǁǁ Ǜǎ ƨ ʅ ǒ!ƒ þǒ!ƒ Ǒ5 ǆʓǂ 1 ƴǁǁ ƴǆơ . Ʀ ǍƥǍ ƨþ Ʈ !ƒ ǇǦƞǁǁ		ƘǛ ư Ƶ ǂǒǍǁǁ LJǒƵƒƨǁǏ!ƒ (8 Ã3) ǂnjƞ ƴǂ!
ƨǦƬǁǇ .ƨơ	LJƒ ƨ ǍǄ	• 0.5 ƴǜǁǁ ƴǆơǍ ǂƞƨþ 90 ǂǍƒ ƨǁ LJǒl5ƨǆ!ƒ ǑǁǇ . Ʀ ǍƥǍ .ǘ5ǁƤ ǗǆǦǆƒ LJǒƵƒƨǁǏ!ƒ ǂơƞƨǆ Ǜþǒ ƴǂ Ǒ5 ǆʓǂ		ƨnjǓ!ƒ ƘǛ ư Ƶ ǂǒǍǁǁ (8 Ã 3)
ƨǦƬǁǇ .ƨơ	ƘǦƬƨ5 Ɣǒƨþǁ	• . Ư ƨǓƒ LJƵ LJǒǁƞƨ!ƒ ƴƨƨ ƴþǦǁ ƟǦƱǁǇƒ • .ǂƞƨþ 45 ǂǍƒ ƨǁ ƳǁǏƞ!ƒ ƴƨƨ .þǍƥƨ		LJƱǁ!ƒ ƘǛ ư Ƶ ǂǒǍǁǁ (8 Ã 3)
ƨǦƬǁǇ .ƨơ	ƘǦƬƨ5 Ɣǒƨþǁ LJƒ ƨ Ǎƒ	• Ʊʓ ư ƴþǦǁ ǛLJǒl5ƨǆ!ƒ ǏǁƵ ƨǦǂǁƨǘ! ǅǦǆǦǆǄ ƇǦǇǁǇǓƒ ǛǍǁƞ .ƴ5 ʅ ǄǗ!ǦƵ ƳǏƞ!ƒ • .ǘ5 Ʈ ǇLJǒǁǂƨ!ƒ ǑǁǇ Ǜǆʓǂ (2) ƴǁǁ ƴǆơ . Ʀ ǍƥǍ		ƘǛ ư Ƶ ǂǒǍǁǁ LJǒǁƞƨ!ƒ (8 Ã 3)
ƨǦƬǁǇ .ƨơ	ƘǦƬƨ5 .Ɣǒƨþǁ	• .LJǒƵƒƨǁǏ!ƒ ƨNj . Ʀ ǍƥǍ • .LJǒǁƞƨ!ƒ ƨNjǍ LJǒǁǂƨ!ƒ ǑǁǇ ǛƨnjǓǁ! LJǒþƵǦ ʅ !ƒ þǇ ʅ .þǍƥƨ!ƒ	10 -5	ǑǆǦǁƤ!ƒ Ƈƨƞ!ƒ

DžNjþ ɿyǁƐNj ƕ ƨ ǫƑ ƨ ǁƐ ƕǏǴǏþǫƗǁƐ ƔǫӨNjǁƐ

ƕǏǁƑƗǁƐ ƕyǴþǓƐ ƯǏǴƑ ƨ ǓƐ njǫDž ĂƗƳ ƔǫӨNjǁƐ ǇPlj þþlƗ

(þɿƳ ƧǫƑƨǁƐ Ûþɿ Ƴ Ƨ DžƑƢǁƐ Ûþɿ Ƴ ƯǴƐþǁƐ Ûþɿ Ƴ ƘǁƑƙǁƐ)

ƱNjǴƨƈ ül Ǐȥ Ɣþ Dž üǫyDžǴNj

!ƑƳ ül ɿǴ !ƨ ǶǁƐ ƕǏDžǆƗNj Ǐ ƨ ǆƗǁƐ ăþNjǫǁƐ ƦƑNJǶǁƐ þǏNjƯƗ :ƔǫӨNjǁƐ ƹǫlj

l ƒưӨǘDž	l ƐNjǫǓƐ	Ƨ þƑDžDžǁƐ ƯƑɿǆǁƐ	DžDžƦǁƐ ƕšǏƺǫǁƑǴ	ƀƐƦǶƈ ƔǫӨNjǁƐ
ƧǴƬƙǉƒ .Ƨơ	ƘǴƬƧ5 ƔǒƧþƙ	• ƗǃǴƱƒ yǒǆη! ƘǘưƵ !ɿηDž.	2	ƇǴǆơǗƒ
	ƗƵǴɿ ƘǒpĂƙ	• ǑƬǆ !þǆl (45) þǒpþƗ ƳƨĂƙ ǏǁƵ ƛǘ Ɨ ƘƒƧƙ5 þǆl ƗùÿPlease.Ɨǒpþ (15) lƧƙ5. • ƳƨĂƙ ǏǁƵ ǇǒƙƧƙ5 þǆl Ɨ ÿ lƧƙ5 (15) Ɨǒpþ	45	ƈƨη!ƒ Ǒɿǒ ƑƧ!ƒ
ƧǴƬƙǉƒ .Ƨơ		ƵǆÿǫƱǴ!Ɨ ηǆǒy ƵƊưǴƇ !ƒη ɿDž	3	ƈƨη!ƒ ǑǆǴƙP!ƒ

ϸʅY hyƓƐϸǁǁƐ hǐƓǏϸqƗǁǁƐ ƔqƟNjǁǁƐ

hǐǁǁƑƗǁǁƐ hyƓϸǕƐ ǓǐƓƑƨǕƐ njqDž ĂƗY ƔqƟNjǁǁƐ LJƤlj ϸϸlƗ

(ϸʅY ƧqƑƨǁǁƐ ÛϸʅY ƧDžƑƠǁǁƐ ÛϸʅY ǓƓƐϸǁǁƐ ÛϸʅY ƘǁǁƑƙǁǁƐ)

ƱNjƓƨƈ ül Ĭƺ Ɣϸ Dž üqyDžƓNj

!ƨǁǁƐ lűƮY hǐNjƨƗ :ƔqƟNjǁǁƐ ƺqlj

lƑưƟűDž	lƐNjqǕƐ	ƧϸƑDžDžǁǁƐ ǓƑʅǁǁƐ	DžDžƦǁǁƐ hƽǐƨqǁƑƓ	ƔqƟNjǁǁƐ ƄƐƦǁǁƈ
ƧƓƬǁǁƒ .Ƨơ	ƗƸƓʅ ƘöpĂƙ	• Ɨ!ƓƱƒ + ƽƑƓϸϸ 5 lϸǁ! Ɨ!ĂƧNj	7	ƇǁǁơǗƒ
ƧƓƬǁǁƒ .Ƨơ	LJƒƨĂƊ ƗƽǁǁƙƤǁ ƗƸƓʅ ƘöpĂƙ Ƨǁǁ	• ƘǁǁƛƒĂ ÜýϸǁǁƙǁǁϸöƒǑ5 Džƺƚ 2 ýlƛ ýǁǁơ ÜƯƽƤǁǁ LJƒƨǁǁ LJƒĂƛ 10 lϸǁ! • .ϸö ýƚ Ǒ5 Džƺƚ 1 ýlƛ ýǁǁơ .yƨƧʅ ǑƬǁǁ • .ƻƙƚ!ƒ ĬǁǁƸ Džƺƚ (3) LJƨĂ Ƨǁǁ ýǁǁơ .ǑƬǁǁ	30	ǑʅǁǁƑƧ!ƒ Ƈƨƞ!ƒ ƗǁǁƓƸ ƗöĂlƙ
ƧƓƬǁǁƒ .Ƨơ	LJƒƨĂƊ ƗƽǁǁƙƤǁ	• Ǒù5 Džƺƚ 1 ýlƛ ýǁǁơ yǁǁ ǁǁƓƸ ǁǁƞ LJöƸƒƧƦ!ƒ yƽƧ ýϸǁǁƙ .ϸö ýƚ • .ǁǁƊ ýϸǁǁƙǁǁ LJöƸƒƧƦ!ƒ LJƒƧĂϸ Üϸö ýƚ Ǒ5 0.5 ýlƛ ýǁǁơ • ýϸǁǁƙǁǁ ǁǁƤ LJöƸƒƧƦ!ƒ LJƒƧĂϸ Üϸö ýƚ Ǒ5 0.5 ƓlƛI		Ƙűƣ Ƹ ƗöĂlƙ LJöƸƒƧƦ!ƒ (8 Ã 3) / (8 Ã 1)
ƧƓƬǁǁƒ .Ƨơ	LJƒƨĂƊ	• 90 ƗöĂƒƨ ýǁǁƺ! ǁǁƊ YƦƞ!ƒ Ǒǁǁ .LJöϸö!ǁǁ Džƺƚ 2 ýlƛ ýǁǁơ .Džʅƞ!ƒ yǁǁ ƗƞƧϸ		ƧnjǓ!ƒ Ƙűƣ Ƹ ƗöĂlƙ (8 Ã 1)
ƧƓƬǁǁƒ .Ƨơ	LJƒƨĂƊ ƘƓƬƧ5 ƔöƧϸƙ	• .ƗƞƧϸ 45 ƗöĂƒƨ LJöǁǁƞƧ!ƒ yƽƧ ýϸǁǁƙ .ϸĂpƧ • ƗùƞƧϸ 45 ƗöƒƨYƦƞ!ƒ yƽƧ ÜǁǁƺƗ 0.5 ýlƛ ýǁǁơ ÜϸĂpƧ .LJöƙƚƧ!ƒ Σǁǁ!		LJƱ!ƒ Ƙűƣ Ƹ ƗöĂlƙ (8 Ã 3) LJöƧǁǁƙ ýƚ!
ƧƓƬǁǁƒ .Ƨơ	LJƒƨĂƊ	• ǑǁǁÜűöǁǁp ǁǁǗƒ Ĭ!ƍ YƦƞ!ƒ ýöǁǁ ÜǁǁƺƗ 3 ýlƛ ýǁǁơ ÜƻĂpĂ .LJöƙƚƧ!ƒ ϸǁǁĂ		Ƙűƣ Ƹ ƗöĂlƙ LJöǁǁƞƧ!ƒ (8 Ã 3)
	ƘƓƬƧ5 .ƔöƧϸƙ	• .LJöƸƒƧƦ!ƒ ƨNj .ƻĂpĂ • .LJöǁǁƞƧ!ƒ ƨNjĂ LJöƙƚƧ!ƒ Ǒǁǁ ÜƧnjǓǁǁ! LJöϸƸƓʅ!ƒ ϸǁǁʅ .ϸĂpƧ!ƒ	10 -5	ǑǁǁƙƤ!ƒ Ƈƨƞ!ƒ

(7) !ﻊþ 5ΘǂǄ

hŭǝƐƤƸǁƐ ƣƐNjǄǁƐ ǄǄ hƨǂƗƢǄ ƱƐNjǳ Ĭƺ njƔƣNjƜNjǄǁƐ þNjƨƨƨǁƐNj !Njĭƨǁƒǀǁ ɭƒĭǄǀ Ǆĭǐĭ

!Ƹǂǅ þNjƨƨƨǁƐ	!Ƹǂǅ !Njĭƨǁƒǀǁ	!Ʒ **100** ü! hŭǝƐƤƸǁƐ ƣƐNjǄǁƐ
	ƒ ĭǐǁ / ǄǐƜǁƐ / ǈǂƒɫƗɭǄNj ƒĭǂΘǁƐ	
102	120	% 3.5 Ǆɭþ!ƒ Ƕɭǈ Ɣŏǁơ
94	123	(% 1.5) Ǆɭþ!ƒ ýŏǁp Ɣŏǁơ
100	120	(0.3) Ǆɭþ!ƒ Ŏ!ǐƤ Ɣŏǁơ
100	130	% 3.5 ƔŏƒƧ!ƒ ǇǁǄ!ƒ
100	130	% 1.5 ƔŏƒƧ!ƒ ǇǁǄ!ƒ
100	120	% 0.2 Ǆɭþ!ƒ Ŏ!ǐƤ ƔŏƒƧ!ƒ ǇǁǄ!ƒ
100	120	% 3.5 ƗǈŏǈT!ƒ
100	120	% 1.5 ƗǈŏǈT!ƒ
50	120	ǇǁǄ!ƒ ýƮǆ
550	800	% .40ƧǆþǄ Ɨǈɳ
700	1100	ŰǐǨǈǆ Ɨǈɳ
500	750	ƒþĂǐp Ɨǈɳ
500	750	% 4 ƧŏǩɭǄŏǩ
350	450	Ǆɭþ % 45 űŏƧŏƨĂǆ
190	120	Ǆɭþ!ƒ Ŏ!ǐƤ Ǉǁ!
800	600	Ǆɭþ % 45 (ƫŏĂþǈɭ!ƒ) ǇNjþ!ƒ Ɨǈɳ
1200	700	Ǆɭþ %.3 ǇNjþ!ƒ Ɨǈɳ
	!NjΘǂǁƐ	
195	13	Ƨǁ!ƒ Ǆơ!
352	7	Ƨǁ!ƒ ɭþǂ
206	15	ýɳƺ!ƒ ǁŏǩɭ
138	9	ƻĂƧƤ!ƒ Yű ưǄ Ǆơ!
200	12	Ɯǐɳþ!ƒ

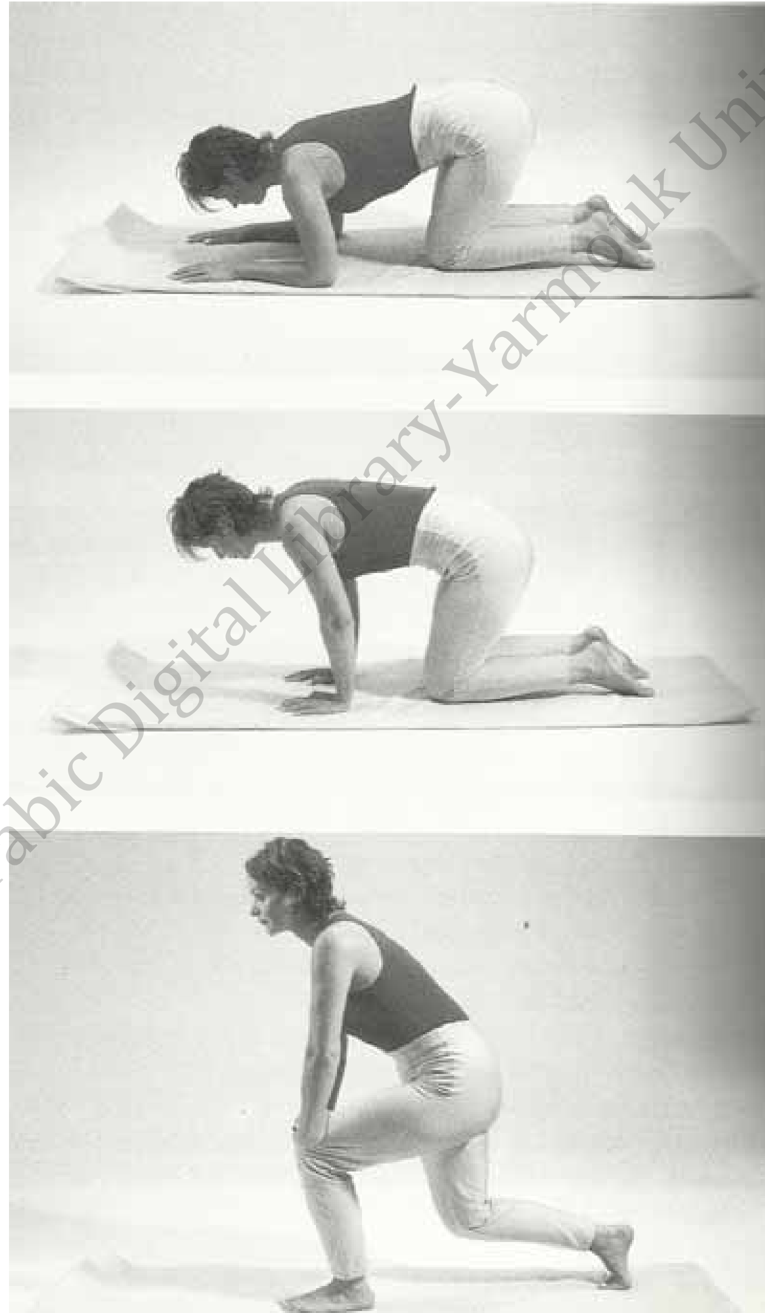
220	25	ýſƨƺ!ſ
pƑĎžƨŬɛ		
190	24	ĂŏǁǁĢǂ
200	40	ĢǈĂƙ
300	51	ƧĢŏƼĢǂ
ƒǋĢƟǁɛ		
341	44	ƠďžǀǃſƠ
373	64	ƧŏƶƬǃſ
350	65	ƠďžǀǃſǂǃĢƤǈ
198	43	(ƧďžƪŰſ ƨǁƤǃſ) ƠďžǀǃſƨǁƤ
325	23	ƧƬǀďžǃſ Ƨŏƹ ƨƧŰſ
120	6	ƧƬǀďžǃſ ƨƧŰſ
195	27	ƗǈĂƧǂƶďžǃſ
ƒƑƪƳŰɛ ÛƖƑƱǂƨǁɛ ÛƖɛǋɛƥƮƣǁɛ (ơĢƯ ǄǋƣĢ) ƥƯƸǁɛ		
61	190	ƒŏƧǀǃſ
82	113	ŎǁǂĂƧǀǃſ
26	26	ýĂǂĢǈŏƬǃſ
51	109	ƧďžĂƬǃſ
38	214	ƥĢƬƧǃſ
87	212	ƧưƤŰſ ýĂǁďžǃſ
23	15	ƧĢŏƤǃſ
50	6	ĢƱĢƱǁǃſ
36	41	Ƨƨƞǃſ
128	245	ƩǈĂƥǀǁǃſ
46	87	ýƞƽǃſ
55	126	ƣǈĢǁƪǃſ
42	27	ýƮǁǃſ

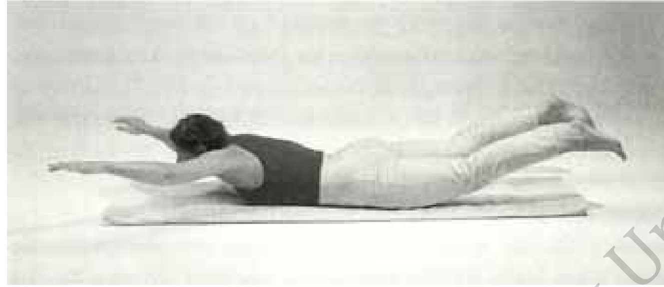
120	10	ƧƱƨ!ƒ
115	23	ǐ Ƨɳơ!ƒ ƧƱƨ!ƒ
ǀ ƑǐǁǋȿƓǁǫ		
430	113	ƇƓǒ!Ă Ʈ Ɠƨ!ƒ
378	51	Ƈǖǒ ƨƓǉ!ƒ
412	74	ƻ Ɠɳ!ƒ Ʃ ƥƶ!ƒ
407	110	ƒ ǆơ!ƒ
98	105	(Ƨ5Ăƙ Ɨǉɳ) ƓǒĂ Ʈ !ƒ
ǇǀǫǋƷǁǫ		
9	16	Ʃ ƓǇƓǇǕƒ
12	7	ƟƓƽƙ!ƒ
22	42	ýƓǀƙƧǉ!ƒ
27	8	ƨĂǆ!ƒ
ɣƥǐƩƬǁǫ ƥǋƤƓǁǫ		
330	225	ƾ ƥǈǉ!ƒ
607	783	Ǆ ʅ ǆ ʅ !ƒ
410	87	ƨĂɳ!ƒ
341	40	ƾ ƙ ʅ ƨ!ƒ

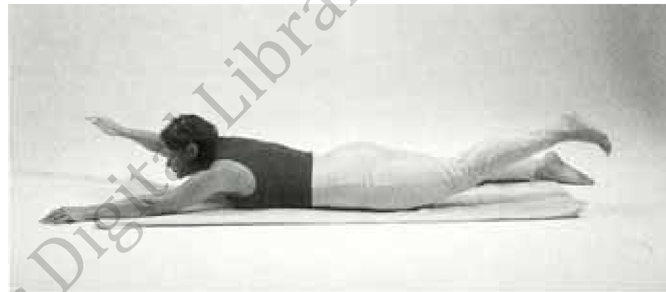
!ǋǐƨǁƑǀǁǫ ƥƺǋƗ ǉƓƨǆ	!ǋǐƨǁƑǀǁƑƓ Ǐǆƹǁǫ ƃƐƤƩǁǫǋ ƒ ǐƗƟǁǫ ƱǫǋǆƐ	!ƨƥǁǫ
Ǆƺǁǆ 225	Ǆ ʅ ƥ!ƒ ýǆƓƗ Ɣǒǁơ!ƒ ǇǆǄ ʅ ƥ!ƒ ýǆƓƗ ýǆ 190	1
Ǆƺǁǆ 231	Ǆ ʅ ƥ!ƒ ýǒǁƿ Ɣǒǁơ!ƒ Ǉǆ ýǆ 190	2
Ǆƺǁǆ 236	Ǆ ʅ ƥ!ƒ YĂƨǈǆ Ɣǒǁơ!ƒ Ǉǆ ýǆ 190	3
Ǆƺǁǆ 207 Ĳ 202	ƧƥǒƬ Ǉǉɳ Ǉǆ ǄƒƧƹ 28	4
Ǆƺǁǆ 240	ǐ ƥƓǉƨ!ƒ Ǉǆ ǄƒƧƹ 140	5
Ǆƺǁǆ 60	ǄĂǁơ!ƒ Ǉǉɳ!ƒ Ǉǆ ǄƒƧƹ 84	6
Ǆƺǁǆ 134	ǄǒƧƗ Ʃ ǒǕƒ Ǉǆ ǄƒƧƹ 112	7
Ǆƺǁǆ 258 -220	(ǄƱƶ!Ɠǉ) Ɨǁ Ʈ ǁ Ʈ !Ɠǉ ǇǒƥƧ ʅ !ƒ Ǉǆ ǄƒƧƹ 56	8

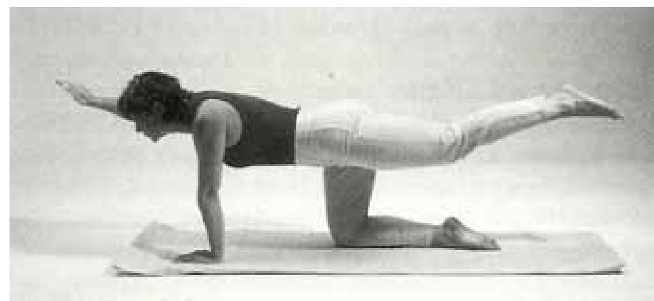
(**8**) !ƽƥ ƼƟǂǄ

ĬƓĭƥƣƗǁƐ ƛǄǊǆƥƓǁƐ ƥǋƬ ǅǅ ƕƳǋǄɯǄ

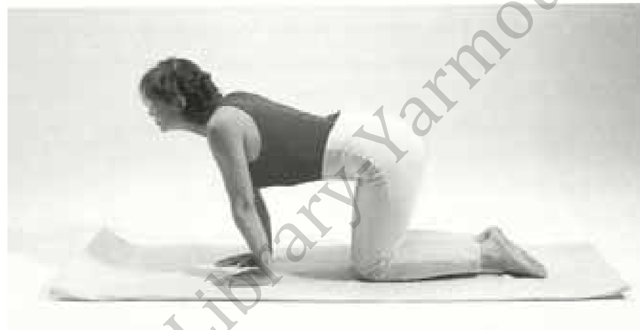








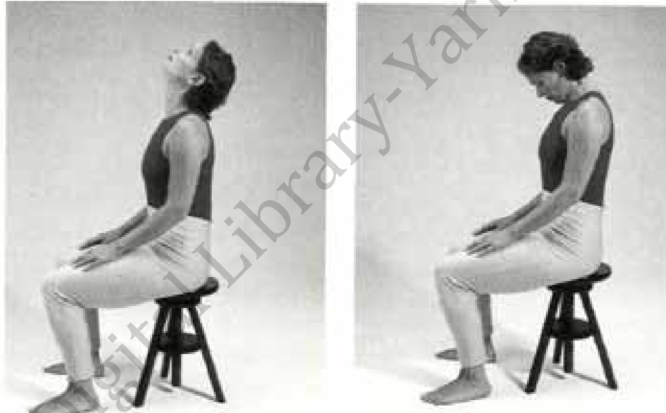
















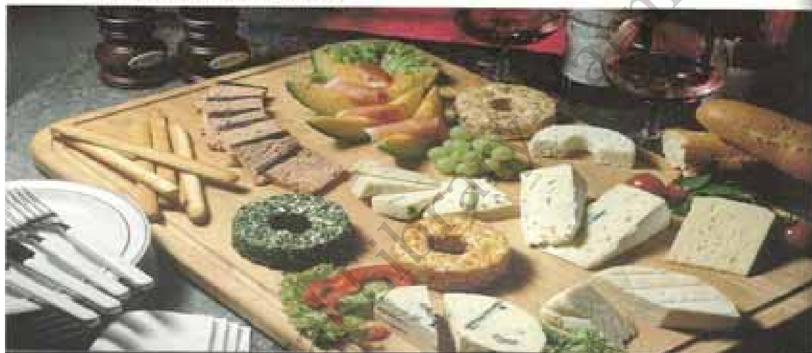



ǏǝƎƤƩǁǃ ƛƉǰǉǆƥǄǁǃ ƉǄƉ ƥƝǰT : (**9**) ƽƟǂƉ



▲ Festlicher Käseteller zum Dessert

▼ Buntes Käsebrett nach dänischer Art





▲ Tomaten-Basilikum-Suppe mit Joghurt

▲ Kräutersuppe Rotkäppchen

▼ Brokkoli-Käse-Suppe



(10) 5ϴǂǅ

ǇǰǅŽǊǅŽǁɛ üĭǊ ƨƗ ƒƑƗǀ

جامعة اليرموك
YARMOUK UNIVERSITY

الرقم...ك.ت.ر/١٠٧/ ١٤٠

التاريخ.../ شوال/١٤٣٣...هـ

الموافق.../ أيلول /٢٠١٢...م

كلية التربية الرياضية
قسم علوم الرياضة

إلى من يهمه الأمر،،،

السلام عليكم ورحمة الله وبركاته،،،

يشهد قسم علوم الرياضة في جامعة اليرموك بأن الطالبة ندوة عبدالله مفلح درابسة ذات الرقم الجامعي (٢٠٠٩٣٨١٠١٠) قد عملت لدينا ضمن برنامج الجرايات، حيث كانت تقوم بمساعدة أعضاء هيئة التدريس على النحو التالي:

١- جراية بحثية للفصل الدراسي الأول ٢٠١٠/٢٠١١.
٢- جراية تدريسية للفصل الدراسي الثاني ٢٠١٠/٢٠١١.
٣- جراية تدريسية للفصل الدراسي الأول ٢٠١١/٢٠١٢.

وتفضلوا بقبول فائق الاحترام،،،

رئيس قسم علوم الرياضة

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Abstract

Darabeseh , Nadwah. Abedullah. The Effect of Rehabilitative Training Program and Diet Nutrition on Women with Osteoporosis Above the Age of Forty in Irbid province, Jordan. A thesis at Yarmouk University 2011- 2012 (Supervisor: Dr. Mohamed Rawashdah).

This study aimed at investigating the effect of implementation of rehabilitative training program and diet nutrition on women with osteoporosis above the age of forty in Irbid city. The sample of the study consisted of 10 women which they were ranged between 40 -65 years old. The period of the program was 16 weeks, 3 times for each week and for 60 minutes for each training dose. The experimental method has been used as it commensurate with the nature of this study.

The mean and standard deviations have been computed and also the t- test for the pre- and post measurements for the variables of the study. The results of the study revealed that:

1-There is a statistical significance difference of the effect of the program on the increase of the bone density for women who suffer from osteoporosis.

2- There is a statistical difference of the effect of the program on the increase of the percentage of calcium in the blood of women with osteoporosis.

Key words: Osteoporosis, Bone Density, The Training Program .